

Palaeogeography

Palaeogeographical Interpretation of Archaeologic Sites of Swamps of the Black Sea Coast of Georgia

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ABSTRACT. Based on an analysis of lithologic, stratigraphic and archaeological materials the palaeogeography of archaeological sites of Kolkheti coastal swamps – former settlements of Ispani and Ontsqoshia – now submerged in peatbog – has been established. © 2010 Bull. Georg. Natl. Acad. Sci.

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The remains of former settlements of the Early Bronze Age - Ispani (near Kobuleti) and Ontsqoshia (south of the river Enguri mouth) have been unearthed from a 2m thick peat layer at about 2 km distance from the coastal line in the process of digging draining channels in the coastal swamps of (Kolkheti) lowland. These settlements have been dated to the second half of the 3rd millennium BC, being proven by the radiocarbon age of cultural strata (4450±50; 4405±50; 4010±50 years) as well. It has been suggested that the mentioned settlements were established near the coastline. Later, due to intensive accumulation of sediments and at the expense of subsidence of the sea as a result of progressing of land, these settlements found themselves at 2 km distance from the coastline. It has also been noted that 4000-4500 years ago the strip of coastal dunes, emerging as a result of the rise of the sea level, prevented surface waters from draining towards the sea, causing bogging up of the littoral lowland. Presumably the above processes were responsible for the destruction of the mentioned settlements [1, 2].

The above views on the paleogeographic situation that existed in the area of location of the mentioned settlements 4000-5000 years ago require further clarification.

Lithologic analysis of facies of drilling materials in the coastal zone of Kolkheti lowland allowed to establish

types of sediments up to 20-30 m depth and character of their in-depth and transversal distribution. This allows to make quite precise evaluation of palaeogeographic conditions of the mentioned regions [3, 4].

In the zone of Kobuleti coastal plane, where the Ispani settlement was discovered, a 6 km long and 1-1.5 km wide peat swamp is situated. The radiocarbon age of its oldest peat layers, lying at 6-7 m depth from the surface, has been determined as 5100±200; 5000±300; 4800±150; 4770±60. Lacustrine clays are found under the peat horizon, which in the depth is replaced by the alluvion of flood-meadow facies [4, 5]. The swamp is separated from the sea by a strip of coastal dunes of 250-300 m width and 4-8 m height. Down to 15-18 m depth it is built of sandy-pebble sediments of coastal marine facies, which are replaced by continental clay and clayey sand. Age of shells of mollusks picked up from 13-15 m depth turned out to be 5720±50 years. The strip of sea bottom of 250-300 m width adjacent to the coastline down to 15-17 m depth is built of sandy-pebble sediments of marine origin. The age of shells picked from these sediments at 7 and 12 m depths is determined as 4290±25 and 5100±50 years. Continental clay and clayey sands are attested under the marine sediments [5].

The coastal plane near the former Ontsqoshia settlement is of similar geological structure. Here too, along

a strip of dunes of 200-250 m width, in 1-1.5 wide Anaklia peat swamp extending to 4-4.5 km distance, age of the oldest layers of peat picked from 6.5 m and 5.3 m depth was found to be 5640 ± 200 and 4570 ± 90 years respectively. In the depth of peat horizon the lacustrine sediments are replaced by the alluvion of grove facies. At the same place the strip of coastal dunes up to 5-7 m depth from the surface is built of sandy-pebble material of coastal-marine facies, which in the depth is replaced by peat and swampy clays and clayey sands. The age of the oldest peat layer situated at 5.5-5.6 m depth varies within the range of 4000-4100 years [3, 4]. Layers of peat and swampy clays and clayey sands extend continuously to the seabed up to 200-250 m distance from the coastal line. On the seabed these sediments are covered with a layer of sandy-pebble material of 5-6 m thickness.

Thus, on the basis of correlative comparison of former settlements, cultural strata discovered under the peat, distribution of continental sediments and dates established by the radiocarbon dating method, it becomes clear that at the moment of foundation of Ispani and Ontsqoshia settlements, the seabed of at least 300m width adjacent to the contemporary coastline represented dry land. Between these settlements and the old coastal line littoral plane was situated, a substantial part of which was occupied by lakes and forest-meadows, being in the process of bogging. Bogging of the plane had started 4700-5000 years prior to establishment of these settlements and strengthened noticeably 3600-4200 years ago at the phase of the New Black Sea transgression when the sea level rose by 1-2 m, as compared to the modern level and 250-300m wide land zone (strip) along the modern coastline was in the zone of active wave action [6]. Finally in this zone of land an elevated strip of coastal dunes has emerged, at the expense of accumulation of coastal-marine facies, which prevented draining of superficial waters towards the sea, thus significantly strengthening the process of bogging. As a result of the above mentioned processes in the second half of the 3rd millennium BC the lacustrine-swampy landscape situated on the coastal plane was completely replaced by peat swamps at the beginning of the 2nd millennium BC, under which 4000-4500 years old former settlements of Ispani and Ontsqoshia found themselves buried under peatbog.

In the past the landscape of the low coastal accumulation plane, together with relief and climate, was

significantly determined by the regime of secular variation of average multiyear level of the sea. Rise of sea level even by several dozens of centimeters significantly worsened the draining of surface waters on the coastal plane. Such conditions of humid, warm climate and high-water rivers promoted the process of bogging, expanding of swamps and caused frequent heavy (in some cases even catastrophic) floods. In such conditions the ecological situation on the coastal plane became unfavorable for inhabitation and the population had to abandon it.

During the regression of sea the drainage of surface water on the coastal plane proceeded smoothly, as a result of which the strength of the bogging process, area of swamps and frequency of heavy floods decreased. The ecological situation of the coastal plane was comparatively favourable for human dwelling and they occupied the territories adjacent to the coastal line.

Analysis of fluctuation in the Black Sea level in the Holocene shows that 6000-6500 years ago Black Sea level for the first time reached the present-day level. The process of bogging of the coastal zone of Kolkheti lowland started from that moment, continuing to the present with different intensity. 5000-4200 years ago the Black Sea underwent regression, due to which the process of bogging on the territories adjacent to the sea shore appreciably decreased and development of these territories by population was continued. As a result of the New Black Sea transgression 4200-3600 years ago the sea level rose by 1-2 m as compared to the present benchmark. At this time the elevated zone of coastal dunes took final shape, which perceptibly enhanced the process of bogging and the population had to abandon the territories of the coastal lowland. 3600-2400 years ago the Black Sea level decreased by at least 2m as compared to the present benchmark (Phanagorian regression) improving the conditions of draining surface waters on the coastal lowland, creating much better ecological situation and human population continued development of coastal territories. In the 4th-3rd centuries BC the Nymphaean transgression started in the Black Sea which, with small oscillations, continues until now. During this period the sea level rose at least by 2 m, which intensified the process of bogging on the coastal lowland and worsened the ecological situation for human settlement.

პალეოგეოგრაფია

საქართველოს შავიზღვისპირა ჭაობების არქეოლოგიური ძეგლების პალეოგეოგრაფიული ინტერპრეტაცია

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ლითოლოგიურ-სტრატეგრაფიული და არქეოლოგიური მასალების ანალიზის საფუძველზე დაზუსტებულია კოლხეთის ზღვისპირა ჭაობების არქეოლოგიური ძეგლების — ისპანისა და ონწყომის ტორფქვეშა ნამოსახლარების პალეოგეოგრაფია.

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