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The Russian Archaeological Project in South America: Principal Findings and Prospects

This study outlines the findings of field and laboratory studies by the first Russian archaeological expedition to South America in 2014–2015 and 2017–2018 in collaboration with colleagues from Ecuador and Japan. The project focused on sites of the Archaic (10.8–6.6 ka BP) and Early Formative period (5.5–3.5 ka BP) in the coastal zone of Santa Elena Province, Ecuador. Excavations at Real Alto (Valdivia culture) and Loma Alto (Las Vegas culture) yielded representative archaeological, anthropological, and faunal samples and a large series of AMS dates, providing a basis for a number of novel proposals regarding the chronology and periodization of cultures, their origin, and early pottery-production in South America. Specifically, we have demonstrated that at the very beginning of the Formative period, two early ceramic traditions coexisted—Valdivia and "San Pedro". We have demonstrated the peculiarity of the "Tropical package" in the stone toolkit, and traced the previously unknown features of the funerary rites of the Las Vegas and Valdivia cultures. Radiocarbon analysis helped to correct the chronology of the late stage of the pre-ceramic Las Vegas culture (8.0–4.8 ka BP) and to estimate the tentative date of the earliest pottery manufacture at 4.8–4.7 ka BP. In conclusion, we outline the top priorities and prospects of Russian archaeological studies on the Pacific coast of South America, underscoring the importance of international cooperation.

Keywords: *South America, Ecuador, Pacific coast, Formative period, chronology, pottery-making.*

Introduction

The ancient cultures of South America began to attract especial interest with the expansion of the geography of Russian marine expeditions in the 19th century and the appearance of artifacts from that distant continent in private collections and capital museums. L.I. Schrenck visited Peru in 1854 and was among the first sponsors who donated their collections to the Kunstkamera (Yakovleva, 2010). Subsequently, Russian archaeologists repeatedly turned their attention to materials from South American cultures, several candidate and doctoral dissertations were defended, and a significant number of articles and monographs were published and received the highest appraisal from the international scientific community (see, e.g., (Bashilov, 1972; Berezkin, 1983)). However, despite a considerable number of planned projects, in the 19th–20th centuries it was impossible to carry out full-fledged expeditionary research on the territory of the South American continent.

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The first archaeological excavations in South America were carried out by the Joint Russian-Ecuadorian expedition in 2014–2015 and 2017–2018; the project was realized by archaeologists from the Far Eastern Federal University (Vladivostok) and the Institute of Archaeology and Ethnography SB RAS (Novosibirsk). The research was focused on the Archaic and Early Formative periods in the coastal part of Ecuador (Tabarev, 2016) (Fig. 1). The Archaic period is represented in the project by the Las Vegas culture (10.8–6.6 ka BP); and the Early Formative period, by the Valdivia culture (5.5–3.5 ka BP) (Estrada, 1956; Evans, Meggers, 1958; Meggers, Evans, Estrada, 1965: 148–150). The chronological classification based on the dates derived in the 1960–1980s and the chronological gap between these cultures required correction and new solutions, which determined the special emphasis of the new project on the phenomenon of early pottery-making, its origins (local or foreign) and cultural background (hunter-gatherer-fisher community or the gradual transition to agriculture). In other words, our intention was to establish and analyze the Neolithization features in this part of the Pacific basin in the local and regional contexts (Tabarev, Popov, 2014).

As a result of the research works of the Russian expedition, representative archaeological, anthropological, and faunal materials were collected; some findings were published in Russian and foreign periodicals (Popov et al., 2016; Tabarev, Marcos, Popov, 2015; Kanomata, Marcos, Popov et al., 2019; Kanomata, Tabarev, Popov et al., 2019; Kanomata et al., 2021; Tabarev et al., 2019, 2021) and presented at international scientific conferences in Russia, Ecuador, Japan, Indonesia, the Philippines, and Poland (see, e.g., (Tabarev, Popov, Marcos, Kanomata, 2016)). Currently, it has become possible to summarize the main results, and outline the priorities and prospects for the next stage of field research by the Russian expedition on the Pacific coast of South America.

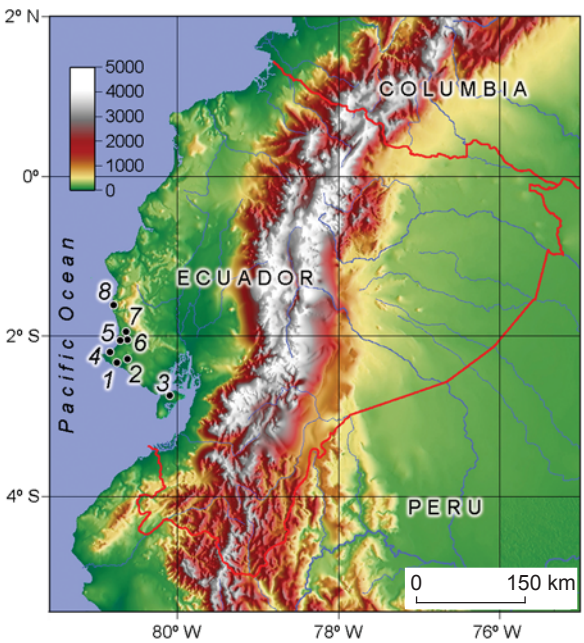

Fig. 1. Locations of the sites under discussion.
1 – Real Alto; *2* – Loma Atahualpa; *3* – El Encanto; *4* – No. 80; *5* – Valdivia; *6* – Loma Alta; *7* – Buen Suceso; *8* – Salango.

Research at the sites of Real Alto and Loma Atahualpa in 2014–2015 and 2017–2018

At first, the research was carried out at the site of Real Alto. The choice was determined by the large area of the site (ca 12 ha), its accessibility, preservation, and comfort (museum area with laboratory premises), the traces of almost all phases of the Valdivia culture, and the signs of an earlier, pre-ceramic horizon, which fully met the objectives of the project.

The area of a large settlement on a hill between the villages of El Real, Pechiche, and Manantial in the Río Verde River basin, in the southern part of the Santa Elena Peninsula (Santa Elena Province), was first examined in August 1971 by J.G. Marcos and was named Real Alto (GSECh-012) (Marcos, 2015: 35). In the 1970–1980s, several projects were implemented at the site, noteworthy among which are large-scale excavations by the University of Illinois (USA) expedition led by D. Lathrap in 1974–1975; the studies included topographic surveys and establishing a series of trenches (A, B, C). Trenches A and B revealed dwelling pits, a set of large earthen mounds with traces of ritual structures, more than 100 single burials, and a necropolis of the local elite. The artifact collection included thousands of stone and shell implements and a great amount of ceramics. In 1977, the expedition led by J. Damp continued excavations in trench C. It was determined that the northeastern section of the site belonged to the earliest period of human occupation at Real Alto—phases 1 and 2. This was evidenced by the thick cultural deposits (over 1 m) and the most ancient dates derived by the traditional method, on charcoal from lowermost horizons with ceramics: 6195 ± ± 215 (GX-5269), 5495 ± 200 (GX-5267), and 5260 ± ± 256 (ISGS-448) BP (Damp, Vargas, 1995) (hereinafter we present uncalibrated dates).

The results of research in the 1970–1980s showed eight successive phases and three main stages in the history of Real Alto: a settlement of early farmers, hunters, and gatherers; a major regional center; and a ceremonial center. According to the former researchers of the site, Real Alto became a large center at phase 3 (ca 4 ka BP) (Lathrap, Marcos, Zeidler, 1977; Marcos, 2015: 86). Russian specialists were familiar with this

assumption from the article by Marcos translated into Russian (1990).

An additional intrigue into the issues of the time of emergence of pottery-making in the coastal part of Ecuador was brought about by the excavations at the site of Loma Alta (10 km from Valdivia, 60 km from Real Alto) carried out by the expedition of the University of Calgary (Canada) in the early 1980s; the early age of Valdivian ceramics was confirmed by the derived dates: 5275 ± 175 (GX-7704), 5010 ± 120 (I-7076), and 5000 ± 190 (ISGS-142) BP (Raymond, 1993). In 2014, in the northeastern part of Real Alto, the Joint Russian-Ecuadorian expedition established an excavation (4 × 5 m); in 2015, two additional trenches—the northern (18 m) and the eastern (20 m)—were made; and in 2017, another 40 m^2 were excavated in addition to the main area. Thus, the total uncovered area over three seasons was 104 m^2 (Fig. 2). The resulting stratigraphic column (1.1 m) contained four cultural layers; their thickness varied from 0.4 m in the main excavation area to several centimeters in the outer squares of the trenches. In total, 10,426 lithic artifacts and 5721 ceramic fragments were recorded in the excavation (excluding trenches); abundant faunal material was also collected, gastropod shells (*Certhidea valida*) in layer 2 and bivalves (*Anadara similis*) in layer 3 predominating. The highest concentration of ceramics (more than 87% of the total amount) was recovered from layers 2 and 3; layer 4 yielded solitary fragments (less than 1%), which were redeposited from overlying horizons (Tabarev et al., 2021) (Fig. 3).

In 2014, three radiocarbon dates of 4450 ± 30 (IAAA-141115), 4490 ± 30 (AAA-141116), and 4620 ± ± 30 (IAAA-141114) BP were obtained for layer 3; these correspond to terminal phase 1 and initial phase 2 according to the periodization proposed by Marcos (Marcos, 2003; Tabarev, Kanomata, Marcos et al., 2016). The date of 5800 ± 30 (IAAA-151361) BP was derived from the medial portion of layer 4; we believe it corresponds to the pre-ceramic period in the history of the site (Popov et al., 2016).

The lower layers and horizon of the virgin land show numerous pits from pillar-type structures and several artifact concentrations with grinding stones and grinders (Fig. 4). Noteworthy is the discovery of four single male burials of a secondary type—almost 100 burials were previously found at Real Alto, but only one or two were attributed to the early phases of the culture (Fig. 5). In the immediate vicinity of the burials, various archaeological materials were recorded: anthropomorphic figurines made of stone and ceramics, tools made of stone, items made of shells, pieces of ocher and sea coral. The date of 4550 ± 20 BP (IAAA-170764) was generated on carbon deposits on a ceramic fragment from burial 2 (northern trench).

The finds from a small area in the northeastern extension to the main excavation are of exceptional importance. More than 50 fragments of vessels, belonging to another early ceramic tradition, "San Pedro" (Fig. 6, *1*), were recovered from the contact zone between layers 3 and 4 (depth 0.8–0.9 m). This culture was first identified by H. Bischof in the early 1970s at the Valdivia site (Bischof, Viteri, 1972) and attributed to the chronological range from 4495 ± 140 (Hv-4840) to 4260 ± 100 BP (Hv-4838), which dates were generated on charcoal samples from the layer (Bischof, Viteri, 2006). At the same time, fragments of ceramics other than Valdivian were found at El Encanto, in a layer with the dates of 4405 ± 90 (SI-1311) and 4370 ± 85 (SI-1184) BP (Porras, 1973: 159), and at Real Alto, in trench C, at a depth of 40–60 cm (between horizons with Valdivian ceramics typical of phases 1 and 2) (Damp, Vargas, 1995).

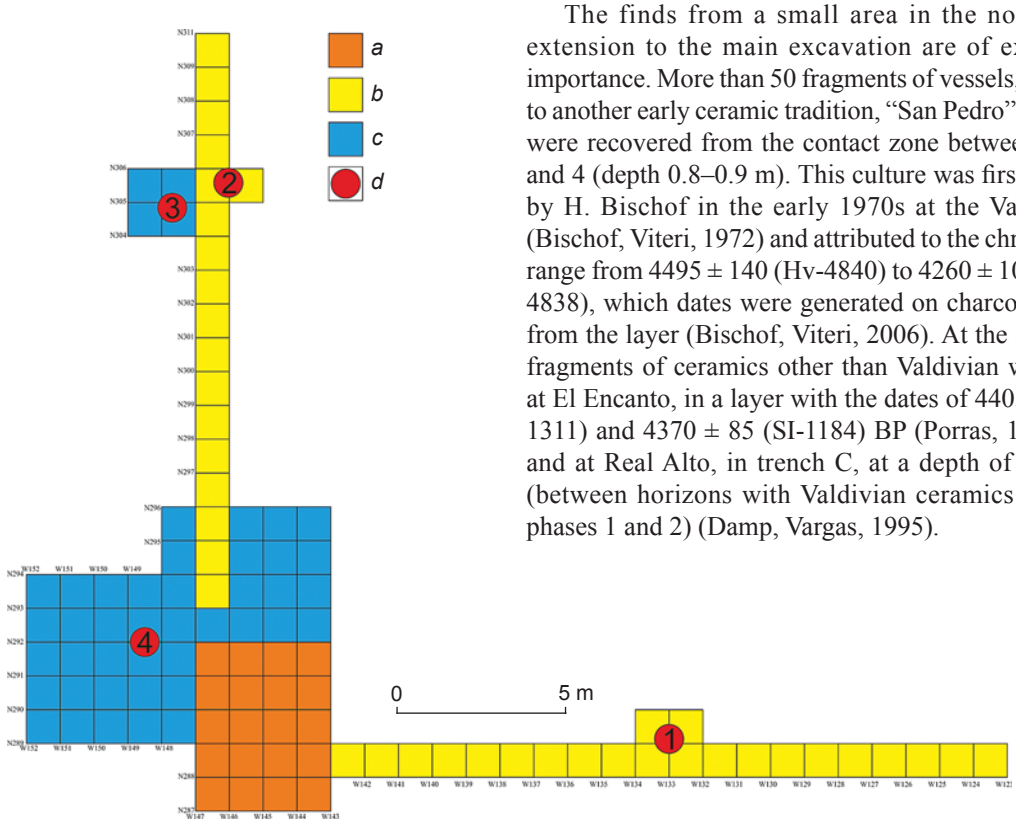

Fig. 2. Map of excavations and trenches at Real Alto.
a – excavation of 2014/15; *b* – trench of 2015; *c* – excavation of 2017; *d* – burials.

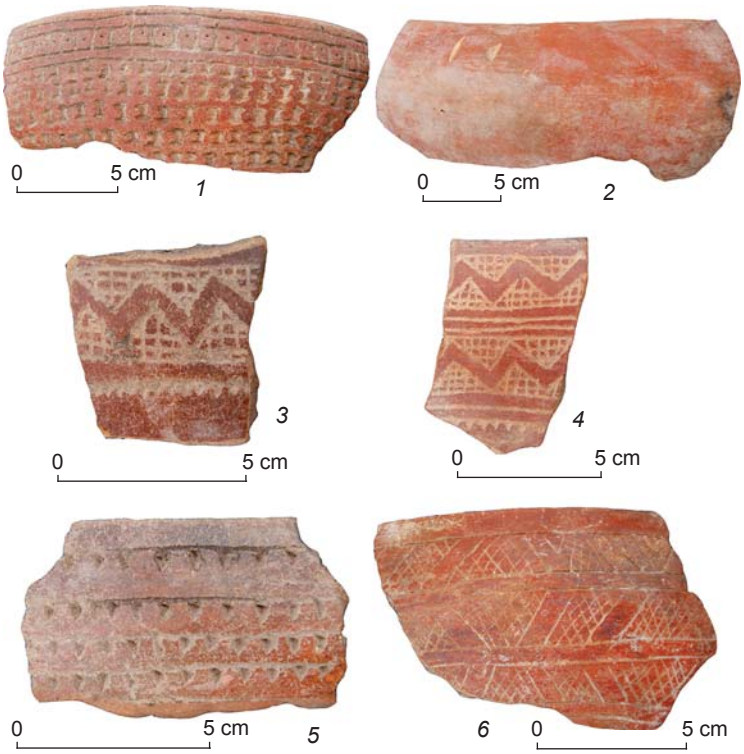

Fig. 3. Valdivia ceramics (phases 1 and 2) from Real Alto.

Fig. 4. Complexes with grinding stones and grinders. Real Alto, northern trench.

Fig. 5. Burial 1. Real Alto.

Researchers were not unanimous concerning the status of the "San Pedro" pottery: H. Bischof considered it as a "separate phase" preceding Valdivia phase 2 (Bischof, Viteri, 2006), while P. Porras and J. Damp believed that it was a variation of the Valdivia tradition. The most interesting hypothesis was proposed by D. Lathrap: "San Pedro" might have been an earlier ceramic tradition on the Ecuadorian coast than the Valdivian one, and "not been its technological predecessor" (Lathrap, Collier, Chandra, 1975: 27).

Charred deposits on the "San Pedro" ceramics provided the radiocarbon dates of 4640 ± 20 (IAAA-171318) and 4460 ± 30 (IAAA-181069) BP, which suggested that the "San Pedro complex" emerged in Real Alto somewhat earlier than Valdivia, the two traditions coexisted for some time, and then "San Pedro" disappeared (Kanomata, Marcos, Popov et al., 2019). Moreover, the publication of fragments of this pottery allowed researchers to identify it in a younger archaeological context at one of the sites in Salango Bay in the Manabi Province (Fig. 6, *2*), which significantly expanded the area of the tradition (Lunniss, Zeidler, Aguilú, 2021: 141, fig. 10, 11).

The results of three seasons of excavations at Real Alto determined the expansion of scope of research and focus on the archaic period preceding the Valdivia and represented by a series of Las Vegas sites. G. Bushnell was

Fig. 6. "San Pedro" ceramics (after (Lunniss, Zeidler, Aguilú, 2021), courtesy of R. Lunniss).
1 – Real Alto; *2* – Salango Bay, sector 141B.

one of the first scholars who reported lithic artifacts (split pebbles, flakes) not accompanied by ceramic fragments on the Santa Elena Peninsula, on the basis of the results of his survey works in the 1930s (1951: 123–124). In the 1960s, E. Lanning recorded a series of sites and proposed the name of "Las Vegas" for this culture (1967: 54–55). The most significant contribution to the study of the Las Vegas was made by the American researcher K. Stothert: she excavated several sites, mapped the distribution of sites, developed a representative database of radiocarbon dates, and proposed an internal periodization of the culture (1988: 56). Among the excavated sites, especially noteworthy is object No. 80 (OGSE-80), containing a series of burials (more than 200 individuals). In a later publication, Stothert mentioned another burial complex (No. 66/67), where she carried out small excavations in 2000 (Stothert, Piperno, Andres, 2003). The data from the excavation reports made it possible to clarify the history of its discovery: first, the site was identified, numbered (OGSEAt-66/67), and tested with pits by specialists from the Escuela Superior Politécnica del Litoral (ESPOL) university back in 1985 during a survey of the area for rescue excavations; in 1993, researchers from that university visited the site under the cultural heritage monitoring project.

In 2001, Stothert established a 5 × 2 m excavation area at OGSEAt-66/67, and at a depth from 0.7 to 1.3 m she discovered 15 secondary burials similar to those at object No. 80. She collected several samples of soil, charcoal, shells, and fragments of human bones for analysis, while the bulk of the finds were preserved *in situ*. This scholar published two dates of 7390 ± 60 (Beta-146982) and 7480 ± 70 (Beta-146983) BP, which she derived from the horizon with burials, and correlated these with the Late Las Vegas (Ibid.).

In 2017, the Russian expedition made an additional test pit at the site, and began full-fledged excavations in 2018. The site of Loma Atahualpa (OGSEAt-66/67) is located on the top of a hill on the watershed between the Tambo River and one of its left tributaries. Altitude above sea level is ca 72 m, and that above the Tambo bed is about 25 m. The area of distribution of the cultural layer is ca 700 m^2. In the middle part of the site (in accordance with the 2017 test pit), an excavation area of 28 m^2 was established; a trench (1 × 4 m) and a pit (1 × 2 m) were made to the south of the main area, and another four pits (1 × 1 m) were made along the boundaries of the site (Fig. 7). Notably, even after clearing the dense bushes, it was not possible to determine visually the location of the Stothert's excavation; during the works, it became clear that the original digging area was located approximately 8–10 m to the west of the 2018 excavation.

The total thickness of culture-bearing deposits (dense, differently colored sandy loam) at the site is about 1.2 m. The main part of the archaeological collection consists of lithic artifacts (almost 5000 spec.) and ceramics (259 spec.). The vast majority (90%) of pottery fragments were found in the upper horizons (0–0.6 m). Their morphological and technological features and ornamentation suggest their attribution to the Late Valdivia and the subsequent local cultures of Machalilla, Guangala, and Manteño. The minimum number (10%) of pottery fragments in the lower horizons was associated with rodent burrows.

The upper horizons yielded over three thousand lithic artifacts; 99% of them are products of knapping quartzite and chalcedony pebbles, nodules of chert and jasperoids. The collection of the morphologically distinct specimens comprises intact and fragmented hammerstones, tools on pebble spalls and flakes, fragments of abraders, two grinding stones, and solitary exhausted cores from chert and chalcedony. In general, the lithic assemblage is quite similar in its technical and typological features to the industry from the ceramic-free horizon and the overlying layer with Early Valdivia (phases 1 and 2) materials at Real Alto, which industry was identified during excavations by the Russian expedition in 2014–2015 and 2017.

The lithic industry of the lower horizons (1913 spec.) looks more homogenous: the pebble component is minor;

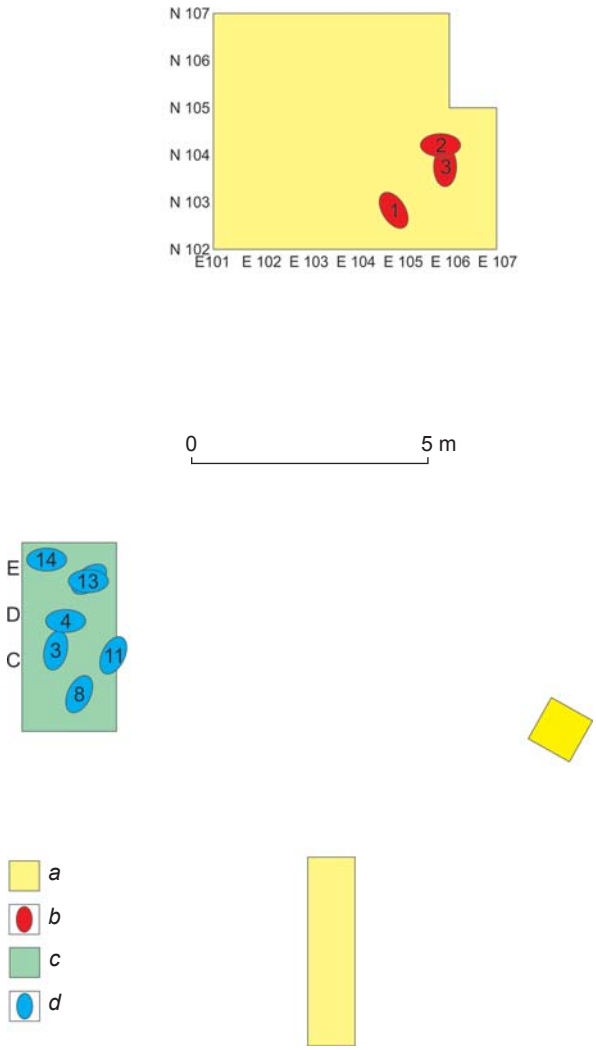

Fig. 7. Map of excavations at Loma Atahualpa.
a – excavation, trench, and test pit of 2018; *b* – burials in excavation 2018; *c* – Stothert's excavation of 2001; *d* – burials in the latter.

artifacts from light-colored chalcedony and black chert predominate; cream-colored and yellow jasperoids are rare. A series of exhausted cores (42 spec.), flakes with discontinuous marginal retouch, small hammerstones, colored pebbles without use-wear signs, and an impressive set of miniature (3–4 cm long) end-scrapers with transverse working edges were also recovered (Fig. 8).

In addition, three burials were found in the excavation.

Burial 2 (female over 50 years old) was uncovered at a depth of 80–100 cm, overlain by a layer of *Anadara similis* bivalves. Her skeleton was in a flexed position, oriented with her skull towards the northeast. A polished axe was placed at her feet (Fig. 9, *1*). The burial was located stratigraphically over burials 1 and 3 and belongs to a younger period.

Burial 1 (female 40–45 years old) was found at a depth of 1.0–1.2 m, practically on the virgin land surface, and was overlain by a layer of shells. The burial was discovered in the test pit in 2017. The skeleton was in the flexed position, oriented with the skull towards the northeast. A shell-pendant was found at the feet of the buried woman (Fig. 9, *2*); a pestle-burnisher was located under her skull.

Burial 3 (male 40–50 years old) was located under burial 2, on the virgin land, under the layer of shells. The pelvis and leg bones were well preserved; the upper part of the skeleton was partly missing: only arm long bones, some vertebrae, and solitary rib fragments survived. The skull was absent; a large sub-rectangular plate with abrasive surface, and a trihedral fragment of shell conglomerate were found in the place of the skull (Fig. 10).

The Loma Atahualpa archaeological assemblage can be correlated with the Las Vegas pre-ceramic culture, but it seems premature to draw more reasoned conclusions based on one field season and a comparatively small excavated area. The dates of 5340 ± 30 and 5710 ± 30 BP, derived from charcoal from a depth of 1 m, also require confirmation/correction.

Discussion: chronology, periodization and the origins of pottery-making

The materials obtained by the Russian expedition allow us to address several most important topics of the discussion, which have both local (Ecuador) and regional (South America) significance. The first topic is the chronology and periodization of cultures of the Archaic and Formative periods, which require clarification. The correctness of radiocarbon dates, most of which were generated on composite samples of charcoal or organic materials (shells, bone) from reference archaeological horizons through traditional technique in the 1960–1980s, needs evaluation. They have a significant error interval, and raise reasonable doubt among many experts. For example, dates for the Valdivia culture derived from samples from Real Alto (6195 ± 215, 5620 ± 250, and 5495 ± 200 BP) and Loma Alta (5275 ± 175 and 5240 ± 420 BP) (Lunniss, Zeidler, Aguilú, 2021) contrast with new AMS-data generated on charred deposits on ceramics from these sites (Real Alto – 4640 ± 20 BP (Kanomata, Marcos, Popov et al., 2019), Loma Alta – 4470 ± 40 BP (Zarrillo et al., 2008)) and with a recently published date of 4915 ± 15 BP for the Early Valdivian horizon at Buen Suceso (Rowe, Duke, 2020). In our opinion, the new data more accurately determine the time of emergence of pottery and, accordingly, the onset of the Formative period in the coastal part of Ecuador: 4.8–4.7 ka BP rather than 5.5 ka BP.

The periodization of the Las Vegas culture also requires correction. In Stothert's version, it was subdivided

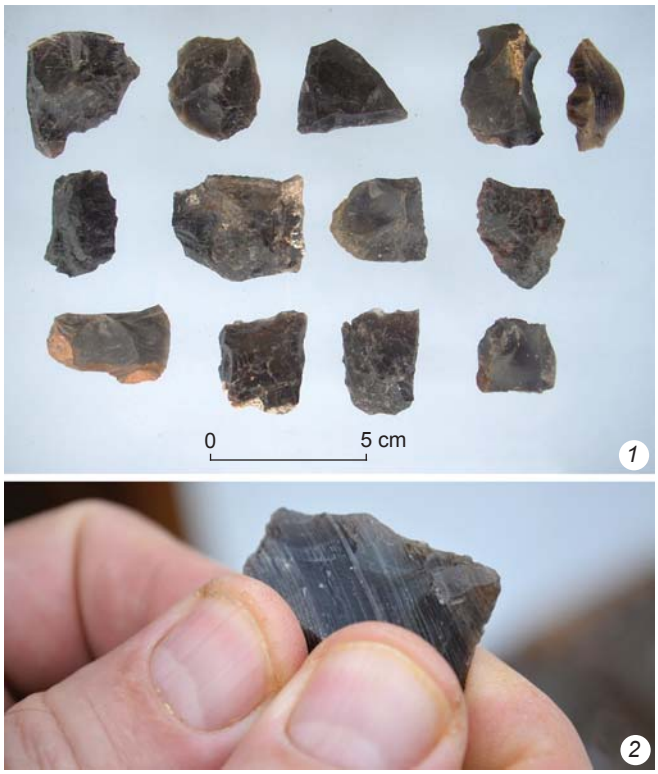

Fig. 8. Micro-end-scrapers with transverse working edges, Loma Atahualpa.

Fig. 9. Small stone axe (celt) from burial 2 (*1*) and bivalve pendant from burial 1 (*2*), Loma Atahualpa.

into the pre-Las Vegas (10.8–10.0 ka BP), early (10–8 ka BP) and late (8.0–6. 6 ka BP) stages; and several "younger" dates (for example, 5830 ± 80 and 5780 ± 60 BP) were associated with the "post-Las Vegas" phase (Stothert, Piperno, Andres, 2003). Taking into account the age assessments by the Russian expedition of the pre-ceramic period layer at Real Alto (5800 ± 30 BP) and Loma Atahualpa (5710 ± 30 and 5340 ± 30 BP), and a series of dates for the layer of the pre-ceramic period at Valdivia (from 4760 ± 80 to 4510 ± 95 BP) (Bischof, Viteri, 2006) it seems reasonable to attribute the Late Las Vegas to 8.0–4.8 ka BP.

Another issue is to determine the features of the transition from the Archaic to the Formative period. On the basis of analysis of phytoliths, Stothert and her colleagues proved that starting from 8–7 ka BP the Late Las Vegas people made the first attempts to cultivate plants: first, calabash (*Lagenaria siceraria*), Guinea arrowroot (*Calathea allouia*), squash (*Cucurbita* spp.), and then maize (*Zea mays*) (Stothert, Piperno, Andres, 2003). Taking into account the contemporaneous appearance of large necropolises (sites No. 66/67 and 80), the late phase of the Las Vegas culture can well be defined as both "Late Archaic" and "Pre-Ceramic Neolithic".

Fig. 10. Burial 3. Loma Atahualpa.

One more topic of the discussion concerns the most intriguing issue—the time and area/areas of emergence of the pottery production. The new data on "San Pedro" ceramics made it possible to identify and prove the fact of coexistence of at least two early ceramic traditions on the Ecuadorian coast during the Formative period. However, neither the "San Pedro" nor the Early Valdivian ceramics document the initial stage of pottery-making—their technological features, despite certain differences, demonstrate quite developed skills in the manufacture of pottery (Kanomata, Marcos, Popov et al., 2019). The authors suggest considering the version of local origin of the "San Pedro" pottery tradition (at the end of the Late Las Vegas), with the subsequent development in the coastal zone of the Early Valdivian tradition, which originated from the continental part. The latter assumption is supported, for example, by the available data on assemblages with early ceramics from Amazonia. This concerns not the rather controversial dating (7 ka BP) of Taperinha ceramics (Meggers, 1997; Roosevelt, 1995), but the archaeological materials from Mayo-Chinchipe sites in eastern Ecuador, which provided the dates of ca 5 ka BP for the early phase (Valdez, 2011), and especially the ceramics in southwestern Brazil (Monte Castelo) and Bolivia (Llanos de Mojos) (Pugliese, Neto, Neves, 2019). For example, at Monte Castelo, the earliest traces of pottery (older than 5200 BP) were recorded at the base of a thick (6.5 m) shell midden. The overlying horizons, dated back to 4.4–4.1 ka BP, yielded ceramics from the so-called Bacabal phase. It shows intriguing parallels in ornamentation with the earliest Valdivian pottery. The date based on carbon deposits on a fragment of a ceramic vessel from the site of Llanos de Mojos also looks promising: 6235 ± 62 BP (Ibid.).

The issue of the chronology and geography of pottery-production centers and the features of their mutual influence is undoubtedly a topic for a separate study. Essential to the subject of the present paper is the increasingly confirmed assumption that there is no evidence of a connection between the pottery's emergence and agriculture in Amazonia (Cerâmicas…, 2016: 32; Neves, 2020). Pottery appeared in semi-sedentary hunter-gatherer communities together with a focus on exploiting aquatic resources; this scenario is also probable for the late phase of the Las Vegas culture on the Ecuadorian coast.

Conclusions

The findings of the first Russian archaeological expedition were presented at international conferences and aroused interest among foreign colleagues. References to publications of the data have appeared in a number of recent generalizing collective monographs on the ancient cultures of pre-Columbian America (see, e.g., (Las Vegas…, 2020; Pre-Columbian Central America…, 2021)).

The achieved results not only expand the corpus of archaeological materials, but also newly formulate the questions about cultural genesis on the Pacific coast of Ecuador. Further development of this issue obviously requires an integrated approach in the form of long-term scientific projects or programs and a new level of international cooperation.

The priority task is to continue stationary archaeological research at the sites of Real Alto and Loma Atahualpa. At Real Alto, there is a need to clarify the chronology and interrelations between the early ceramic traditions of "San Pedro" and Valdivia, and to search for arguments in favor of the connection of "San Pedro" ceramics with other categories of artifacts and, possibly, burials. At Loma Atahualpa, to search for new burials of the Las Vegas culture, carry out a thorough analysis of grave goods aimed at the possible discovery of early ceramics, and obtain additional dates to determine the chronology of the necropolis. Detailed anthropological studies and, despite the characteristics of dry tropical soils, collection of soil samples for DNA extraction are also extremely relevant. Finally, the full-fledged continuation of archaeological research in South America implies the expansion of the geographical and chronological framework, addressing the full range of pre-Hispanic cultures on the Pacific coast of Ecuador, and considering prospects for work in neighboring countries.

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