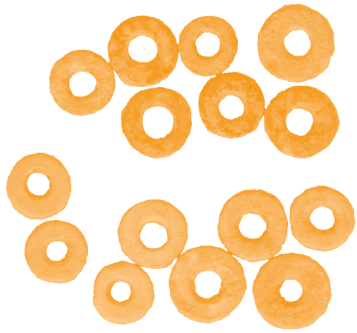
Unearthing a Middle Nile crossroads – exploring the prehistory of the Letti Basin (Sudan)



Abstract: New research on early Holocene settlement and burial practices in the Southern Dongola Reach focused on the key areas of the Letti region, Argi (adjacent to Affad) and the outlets of Wadi el-Melik and Wadi Howar. The project follows up on ten years of investigations by the PalaeoAffad Project in the Affad region (Northern Province, Sudan). Unique data collected in the course of the first season of fieldwork reopens the debate on cattle domestication and early pottery production in the region (previously classified as the Tergis Group). The new finds, concerning Neolithic and Kerma settlement in the region, enables changes in the currently accepted absolute chronology of prehistoric settlement in the area.

Keywords: survey, Letti, early Holocene, Palaeolithic, Neolithic, Kerma

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INTRODUCTION

Following a decade of intensive fieldwork in the Affad Basin, carried out by the PalaeoAffad Project (Osypinska et al. 2020), the research has been extended to the region downriver from Affad, that is, the Letti Basin and the surrounding land. Research on the prehistory of the Letti microregion was initiated directly or indirectly by the

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expedition working at Old Dongola (led first by Kazimierz Michałowski and then Stefan Jakobielski), with Michał Kobusiewicz and Lech Krzyżaniak carrying out the first explorations already in the 1970s (including initial archaeological testing in Kadakol; Jakobielski and Krzyżaniak 1967–1968; Krzyżaniak 1968; Kobusiewicz and Krzyżaniak 1974). A team of prehistorians, including Marek Chłodnicki, Jacek Kabaciński and Donatella Usai left their footprints in Letti for the next quarter of a century, until the early 2000s (Grzymski 1987; Kobusiewicz and Kabaciński 1996; Usai 1998; 2001; Chłodnicki 2000; Chłodnicki and Kabaciński 2003). Their work highlighted the importance of late prehistory on sites in the region, showing at the same time a relatively limited amount of data from the pre-Holocene part of prehistory.

The current project, which went to the field for the first time in March 2022, aims to review the condition of prehistoric sites known from this microregion and to explore their research potential, especially in light of questions raised by results of the recently concluded PalaeoAffad project. Issues that are in need of being addressed in these investigations:

– Pleistocene occupation studied in reference to the richly represented settlement from the MIS3 period in the Affad Basin;
– early Holocene settlement in the Middle Nile valley and a growing body of data on early stages of neolithization in the region, including regional processes of animal domestication, mainly cattle;
– settlement straddling the pre- and protohistory phases, that is, the Kerma cultural horizon, focusing on identifying regional settlement specificity outside the central zone with the city of Kerma and its immediate hinterland (region of the Third Cataract).

Connecting the three lines of investigation were questions about the role of the Middle Nile Valley, a specific supraregional crossroads, in the processes of long-term exchange of material correlates of human culture and ideas.

METHODS

The research area was divided into three zones based on ground morphology and access opportunities [*Fig. 1*]:

- **LTI (Letti Island)** – former terraces cut off by the beds of the Nile, the modern one to the west and the ancient one to the east;
- **LTB (Letti Basin)** – land under cultivation in a depression corresponding to the ancient Nile bed;
- **LTD (Letti Desert)** – area between the ancient Nile bed and the Karima–Nawa asphalt road between Nawa and Jebel Ghaddar.

A new numbering system was introduced, issuing from the said division into three zones. It provides a comprehensive record of all of the located sites. An effort, not always successful, was made to identify sites from the ROM (=Royal Ontario Museum] survey (Grzymski 1987).

A ground survey on foot was carried out by a specialist team. The exact location and extent of archaeological sites

from each period (not only the prehistoric ones) was established based on now available GPS technology. Sites of particular importance were additionally mapped using a drone and a RTK GPS set (LTI012, LTD001, LTD002, LTD003).

The collected small finds were documented and initially processed at the Banganarti Archaeological Station.[1] In the case of lithics and ceramics, the raw material was studied and a morphological and technological classification was made. The collected organic remains (human and animal bones, shells and eggshell fragments) were classified and documented on the spot. The archaeological material is stored at the BAS facility, while selected samples intended for

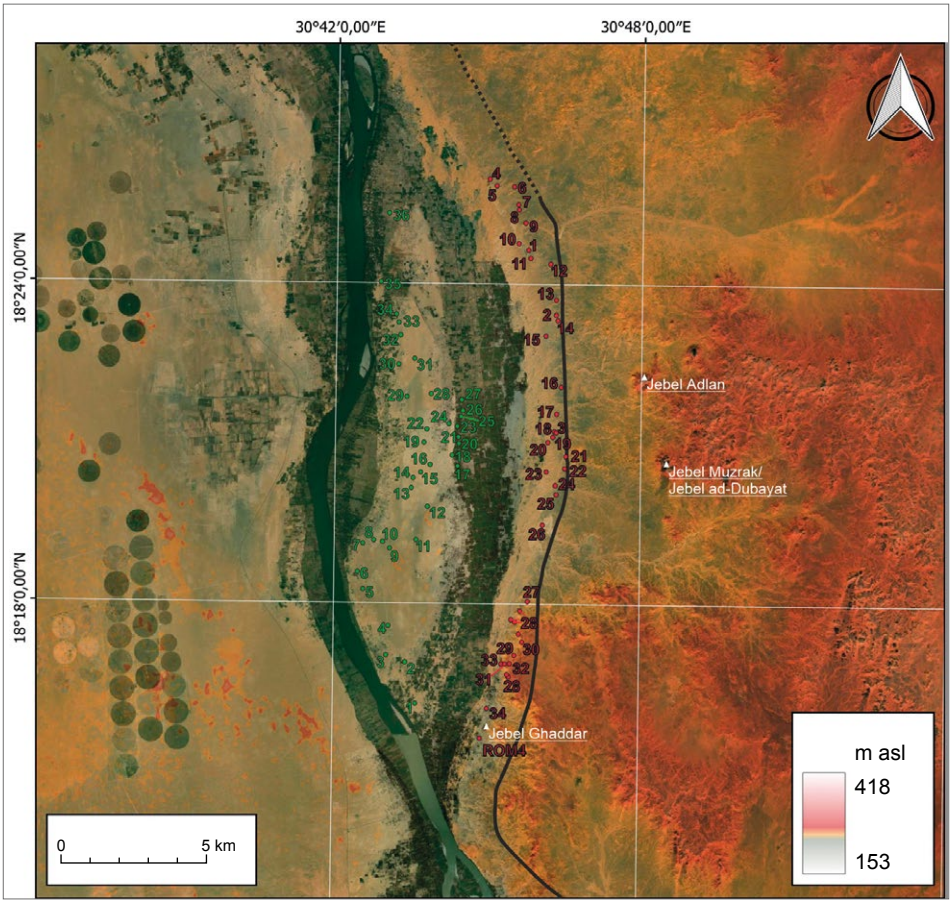

Fig. 1. Archaeological loci known after fieldwork in Letti in 2022: sites marked in green = Letti Island (LTI), in red = Letti Desert (LTD) (IAE PAS | mapping P. Osypiński)

1 The project works from a new facility for archaeological projects in the region, the Banganarti Archaeological Station (BAS) established by Bogdan T. Żurawski. The BAS facility offers storage and office capacity, as well as comfortable living quarters for the team.

laboratory analyses were either placed in safe storage or transported to Poland after the field season.

Limited rescue excavations at four sites yielded material that was processed in the same way as the survey finds.

RESULTS

Results presented here encompass data on prehistoric sites in compliance with the objectives of the current project. A full record of the findings is presented here in tabular and cartographic form [*Table 1*; see *Fig. 1*]. Many sites known from previous studies, especially those on Letti Island, have been damaged by intense urban development processes. The results of radiocarbon dating of samples at the ^{14}C AMS laboratory in Poznań are presented in tabular form as well [*Table 2*].

Table 1. Ancient settlement in the Letti zone: current site identification
LTI = Letti Island; LTD = Letti Desert; identification of Royal Ontario Museum (ROM) sites based on Grzymski 1987; Usai 2001; Chłodnicki and Kabaciński 2003; Chłodnicki and Grzymski 2018

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTI001 =Hambukol =ROM33	N 18°16'17.1" E 30°43' 38.3"	>100 m east of current river channel	Christian period	Vast Christian settlement studied since the 1980s, published (ROM expedition/ K. Grzymski). Site partly fenced in and not built-up, but littered. ROM mission house devastated and looted, the excavation material in disarray in the storeroom (now secured with a new padlock).
LTI002 =ROM203(?)	N 18°16'51.0" E 30°43'27.3"	Between buildings in the village	Kerma(?) Christian period(?)	
LTI003 =Megauda S =ROM38	N 18°16'51.2" E 30°43'06.3" – N 18°17'05.7" E 30°43'00.8"	>100 m east of current river channel	Christian period	Complex of large koms with mud-brick architecture and red bricks exposed on hilltops. Graves exposed on the surface.

Table continued on pages 30–41

Table 1. (continued)

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTI004 =ROM200–205	N 18°17'38.4" E 30°43'09.0"	Between school, modern cemetery and area destroyed by clay mining and industrial farm structures	Neolithic Kerma post–Meroitic(?)	Complex of sites, published (Usai 1998; Chłodnicki and Kabaciński 2003; Chłodnicki and Grzymski 2018). Test excavations by the current project/ supervisors P. Bobrowski and J. Kokolus
LTI005 =Megauda N =ROM45	N 18°17'58.1" E 30°42'33.1" – N 18°18'18.9" E 30°42'28.8"	>100 m east of current river channel	Christian period	Complex of large koms with mud-brick architecture and red bricks exposed on elevation tops. Graves exposed on the surface. Central kom: marked clusters of large amphora sherds. Information boards set up at the site.
LTI006	N 18°18'26.4" E 30°42'25.0"	>100 m east of current river channel	Christian period	Small kom, diameter approximately 50 m
LTI007 =Kadakol church? =ROM54	N 18°18'54.3" E 30°42'27.8" – N 18°19'00.6" E 30°42'28.3"	>100 m east of current river channel	Christian period	Several low koms with large quantities of red-brick fragments and human burials exposed on the surface
LTI008 =ROM207	N 18°18'58.5" E 30°42'51.1"	East of Megauda N	A–Group settlement Meroitic cemetery	Reported site (Usai 1998)
LTI009 =ROM208	N 18°18'59.1" E 30°43'00.3"		Mesolithic	Reported settlement site (Usai 1998)
LTI010 =ROM234	N 18°19'01.8" E 30°42'40.6"		Mesolithic	Reported settlement site (Usai 2001)

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTI011 =ROM231	N 18°19'03.1" E 30°43'31.1"		Mesolithic / Neolithic	Reported settlement site (Usai 2001)
LTI012 =ROM232	N 18°19'41.1" E 30°43'43.1"		Mesolithic	Reported settlement site (Usai 2001)
LTI013 =ROM239	N 18°19'56.9" E 30°43'22.6" – N 18°20'04.1"E 30°43'22.9"	Silt terrace (weathered), below preserved plant root systems with limestone precipitates (visible in the irrigation ditch)	Mesolithic(?)	Reported site (Usai 2001)
LTI014	N 18°20'10.1" E 30°43'23.9" – N 18°20'15.2" E 30°43'22.9"	Silt terrace, weathered surface	Kush	Bifacial arrowhead with a concave base, analogous to finds from the Northern Dongola Reach Survey (Welsby 2001) [see ***Fig. 2:a***]
LTI015 =ROM240	N 18°20'18.0" E 30°43'32.2"		Mesolithic	Reported settlement site (Usai 2001)
LTI016 =ROM236	N 18°19'03.1" E 30°43'31.1"		Mesolithic	Reported settlement site (Usai 2001)
LTI017	N 18°20'28.5" E 30°44'17.5"	Flattening between dunes and houses, partly on the road to Ghaddar	Kerma Christian period(?)	

Table 1. (continued)

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTI018	N 18°20'41.6" E 30°44'10.3"	Between dunes and houses	Kerma + later presence	
LTI019 =Kadakol	N 18°20'55.2" E 30°43'34.4"	Silt outlier in eastern Letti Island, several hundred meters in diameter, relative height 2–3 m	Kerma Kush cemetery (6th/5th c. BCE – ^{14}C date) Christian cemetery (12th/13th c. CE – one ^{14}C date)	Reported settlement and cemetery site, but without specifying exact location (Kobusiewicz and Krzyżaniak 1974) Test excavations by the current project/ supervisors P. Bobrowski and J. Kokolus
LTI020	N 18°20'56.0" E 30°44'17.6"	Small hill and area at base between dunes and houses; Khor Letti on left	Christian period Funj	
LTI021	N 18°21'02.3" E 30°44'17.8"	Flattening between dunes and houses; Khor Letti on left	Christian period	
LTI022 =ROM237	N 18°21'09.4" E 30°43'36.9"		Mesolithic	Reported settlement site (Usai 2001)
LTI023	N 18°21'20.6" E 30°44'14.8" – N 18°21'09.5" E 30°44'15.3"	Flattening between dunes and houses, Khor Letti on the left	Kerma	
LTI024	N 18°21'17.7" E 30°44'05.2"	Small inselbergs between dunes and houses, mostly under sand; left side of Khor Letti	Christian period(?) Funj(?)	

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTI025	N 18°21'27.4" E 30°44'20.0"	Between dunes; left side of Khor Letti	Neolithic(?) Kerma Christian period	
LTI026	N 18°21'33.9" E 30°44'21.6"	Between dune and fields, where road opens onto a field in Khor Letti	Christian period(?) Funj(?)	
LTI027	N 18°21'46.8" E 30°44'19.2"	Between dunes and houses; Khor Letti on the left	Kerma(?) Funj	
LTI028 =ROM238	N 18°21'52.9" E 30°43'39.3"		Mesolithic	Reported settlement site (Usai 2001)
LTI029 =Kulubnarti	N 18°21'37.1" E 30°43'07.2" – N 18°21'57.8" E 30°43'09.5"	100 m east of current river channel	Christian period	Several large koms of Christian date with cemeteries and graves exposed on the surface
LTI030	N 18°22'24.0" E 30°43'15.0"	Flat inselberg of silt	Neolithic Kerma Christian period	
LTI031	N 18°22'35.9" E 30°43'31.4" – N 18°22'28.2" E 30°43'34.9"	Flat plain (former terrace), layers of pebbles currently harvested and screened on site for construction purposes	early Holocene –Mesolithic	

Table 1. (continued)

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTI032	N 18°22'56.1" E 30°43'16.0"	Plateau on the former terrace	Kush/Napatan period (1^{4C} dates on ostrich eggshell: 11th–6th c. BCE)	
LTI033	N 18°23'03.9" E 30°43'12.9" – N 18°23'16.9" E 30°43'10.8"	Low silt outlier within a modern cemetery	Neolithic early Kerma	
LTI034	N 18°23'19.3" E 30°43'09.0"	Small hill between modern village buildings	Chistian period	Stone lintels(?)
LTI035 =ROM25	N 18°23'57.7" E 30°42'43.5"	Kasse, west of Amentego	Meroitic/ Napatan(?)	
LTI036 =ROM21	N 18°25'15.3" E 30°43'02.7"	Urukutti, around the old post office in Nawa	Kushite(?) Christian period	
LTD001	N 18°24'37.6" E 30°45'43.7"	Small hill on terrace edge, occupied in part by an Islamic cemetery	Kerma (3rd–mid 2nd millennium BCE)	Test excavations by the current project/ supervisor J. Kokolus (see below)
LTD002	N 18°23'26.3" E 30°46'20.9"	Silt inselberg on sandstone outcrop at edge of desert plateau (remnant of former terrace)	Mesolithic (8th millennium BCE) Neolithic(?)	Test excavations by the current project/ supervisor P. Osypiński (see below).
LTD003 =Caravan Seray =ROM 82?	N 18°21'12.3" E 30°46'19.2"	Edge of terrace and desert	Funj	Stone architecture: three rooms in the corners of a square complex, 20 m to the side

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTD004	N 18°25'53.9" E 30°45'04.8"	Rocky inselbergs at edge of terrace and desert	Funj(?)	Islamic cemetery and *qubba* ruins with stone facing, but also ruins of a square stone building (mosque?)
LTD005	N 18°25'46.0" E 30°45'12.9"	Rocky hills at edge of desert and terraces	Christian(?) Funj(?)	Islamic cemeteries. Box-grave stone structures observed among the graves
LTD006	N 18°25'44.4" E 30°45'33.7"	Rocky hill at edge of desert and terraces	Kerma cemetery(?)	
LTD007	N 18°25'23.5" E 30°45'37.6"	Edge of desert and former terrace	Kush(?) Christian(?) Funj	Completely destroyed stone and mud-brick structure: tumulus or box grave; fragments of bricks reused in the construction of Islamic tombs
LTD008	N 18°25'17.8" E 30°45'38.6"	Hilltop at edge of desert and former terrace	Kush? Christian?	Completely destroyed stone and mud-brick structures (at least two tumuli or box graves)
LTD009	N 18°25'02.5" E 30°45'45.4"		Funj(?)	*Qubba* made of red bricks from a demolished structure
LTD010	N 18°24'39.6" E 30°45'36.3"	Slight depression in the terrace	?	Rectangular stone and brick foundation (well? *saqia*?)
LTD011	N 18°24'33.5" E 30°45'46.2" – N 18°24'28.0" E 30°45'50.1"	Small silt inselbergs on the terrace and desert edge	Kerma	
LTD012	N 18°24'23.2" E 30°46'13.5"	Edge of desert	Funj(?)	About 10 large box graves built of sandstone (N–S orientation)

Table 1 continued

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTD013	N 18°23'42.9" E 30°46'20.5"	Edge of desert	Christian period(?) Funj	More than six large box graves, or rather tumuli, built of stone and mud-bricks; 100 m to the west, early Islamic cemetery with the ruins of a *qubba* built of demolition red bricks
LTD014	N 18°23'19.9" E 30°46'21.8"	Silt inselberg on sandstone outcrop at edge of desert plateau (remnant of former terrace)	Late MSA(?)	Mousterian point and bifacial piece [see ***Fig. 3***]
LTD015	N 18°23'06.5" E 30°46'08.5" – N 18°22'55.8" E 30°46'07.3"	Terrace between modern buildings and old river channel	Kerma Kush	Sickle insert imported from Egypt [see ***Fig. 2:b***]
LTD016	N 18°22'07.2" E 30°46'25.3" – N 18°21'51.1" E 30°46'25.8"	Rocky plateau dotted with rock fragments	Mesolithic	
LTD017	N 18°21'34.9" E 30°46'26.2"	Silt rocky hill on desert and terrace edge; Islamic cemetery over a part of it	Mesolithic/ Neolithic	Cemetery site
LTD018	N 18°21'13.0" E 30°46'17.2"	Edge of terrace and desert, >50 m west of site LTD003	Funj?	Complex of several stone tumuli with an average diameter of approximately 3 m
LTD019	N 18°21'06.0" E 30°46'16.3"	Rocky hilltop at edge of terrace and desert	MSA	Single atifacts of ferruginous sandstone

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTD020 =ROM83(?)	N 18°21'01.3" E 30°46'11.5" – N 18°21'02.3" E 30°46'09.0"	Vast area on terrace (low koms) with relics of mud and stone architecture	Funj	
LTD021 =ROM229	N 18°20'41" E 30°46'34"	Small plateau just below desert edge, next to small wadi	MSA Neolithic	Levallois flakes, Levallois point, handaxe + numerous flakes and blades on the surface (roughly about 0.5 ha). Site partly destroyed by road construction
LTD022 =ROM222	N18°20'27.04" E30°46'31.58"	Close to Islamic cemetery, about 800 m north of Hag Magid	Neolithic	Numerous pottery and lithic finds. Site partly destroyed by road construction
LTD023 Hag Magid =ROM49	N 18°20'30.8" E 30°46'10.8" – N 18°20'23.4" E 30°46'06.1"	Undulated plateau	Christian period Funj	Two *qubbas* built of demolition bricks from a Christian structure, and the ruins of a church on a rocky hilltop. Sand dune engulfing granite columns at the foot of the hill on the eastern side
LTD024 =ROM105	N 18°20'10.2" E 30°46'20.3"	South of Hag Magid	post-Meroitic	Cemetery site fenced in with metal bars
LTD025 =ROM84	N 18°19'59.6" E 30°46'21.2"	Undulated plateau	post-Meroitic	Tumuli cemetery
LTD026	N 18°19'23.8" E 30°46'05.7"	Khor Letti outlet	?	Relics of a mud-brick structure protecting against sand wind-blown in from the north: probably a well or *saqia*

Table 1 continued

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTD027	N 18°18'00.3" E 30°45'50.8" – N 18°17'58.3" E 30°45'42.5"	Peaks of small rocky outliers at edge of terrace and desert plateau	Kerma(?)	Cemetery site
LTD028 =ROM23(?) =ROM31(?) =ROM46	N 18°17'50.1" E 30°45'39.5"; N 18°17'39.1" E 30°45'35.6"; N 18°17'39.3" E 30°45'32.8"; N 18°17'39.3" E 30°45'32.8"; N 18°17'40.9" E 30°45'29.6"; N 18°17'25.7" E 30°45'38.1"; N 18°17'06.9" E 30°45'27.6"; N 18o16'50.2" E 30°45'17.6"; N 18°16'35.9" E 30°45'25.2"; N 18°16'37.2" E 30°45v24.7"	Tops of exposed rocky hills on edge of desert plateau and terraces	Kush	Stone superstructures (tombs?), sometimes with a rectangular box outlined at the base, rectangular rock-cut chamber, 2.00 m by 1.50 m, usually oriented NW–SE. Scattered red bricks from demolished underground elements
LTD029 =ROM 212–215	N 18°16'57" E 30°45'25"	Jebel Sheikh el-Kasal, pronounced hill at edge of desert + surroundings	MSA	Thousands of stone artifacts Levallois cores for flakes and points, retouched flaked, denticulate flakes, side scrapers, bifaces
LTD030	N 18°17'15.9" E 30°45'42.0"	Small plateau on rocky outcrop of quality ferrocrete sandstone	MSA(?)	
LTD031 =ROM26	N 18°16'50.2" E 30°45'21.7"	Low saddle on Jebel Sheikh Joda	Christian period	Greek inscription [see ***Fig. 2:c***]

Site ID	GPS coordinates	Location and dimensions	Chronology	Comments
LTD032	N 18°16'50.2" E 30°45'26.8"	Top of rocky inselberg	Palaeolithic (MSA) Christian period	
LTD033	N 18°16'49.6" E 30°45'17.8"	Opposite end of large Christian settlement stretching from Jebel Sheikh Joda	Kerma/Kush(?)	Group of several small stone tumuli with a diameter of about 2–3 m. Looted
LTD034 =63 MC	N 18°016' E 30°045'	Hill overlooking a small wadi	Kush/ post-Meroitic(?)	Single tumulus with stone ring wall, approximately 3 m in diameter

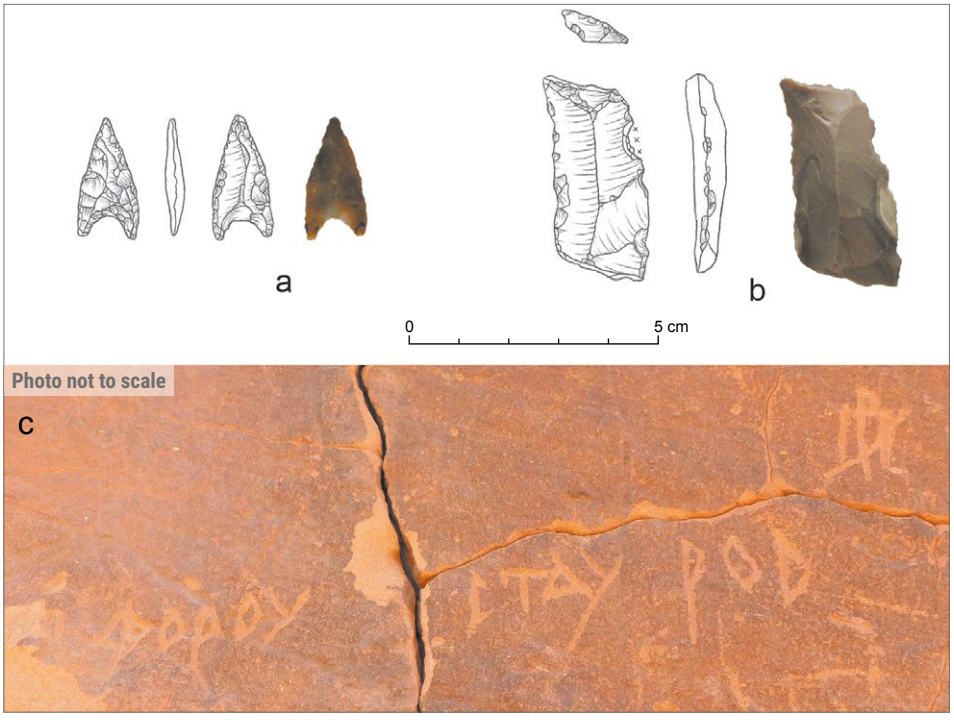

Fig. 2. Selected lithic finds from the ground survey: a – chert bifacial arrowhead with concave base (site LTI014); b – sickle-insert made of Egyptian flint (site LTD015); c – Greek inscription (site LTD031 = Jebel Sheikh Joda) (IAE PAS | drawing M. Cendrowska, photos & processing P. Osypiński)

Table 2. Radiocarbon dating of material from Letti research in 2022 (OES = ostrich eggshell); calibration: OxCal v4.4.2 Bronk Ramsey 2020; r:5; atmospheric data from Reimer et al. 2020

Context	Content	Sample ID	Radiocarbon age (BP)	Calibration results (95.4% probability)
LTI018 [Kadakol] Burial (F.2)	Wood	Poz-153463	840 ± 30	1162 CE (95.4%) 1267 CE
LTI018 [Kadakol] Burial (F.13)	Charcoal	Poz-153049	2425 ± 30	749 BCE (16.1%) 686 BCE 666 BCE (6.8%) 640 BCE 587 BCE (0.3%) 583 BCE 570 BCE (72.3%) 403 BCE
LTI032 Surface find	OES fragment	Poz-153908	2535 ± 30	795 BCE (33.5%) 735 BCE 696 BCE (16.2%) 662 BCE 650 BCE (45.8%) 546 BCE
	OES bead (6.1 mm)	Poz-154236	2820 ± 30	1106 BCE (0.5%) 1098 BCE 1079 BCE (0.7%) 1069 BCE 1056 BCE (94.2%) 898 BCE
LTD001 C.2 feature	Charcoal	Poz-153193	3275 ± 30	1618 BCE (91.6%) 1497 BCE 1476 BCE (3.9%) 1458 BCE
LTD001 C.18 feature	Bivalves	Poz-154235	3715 ± 35	2268 BCE (0.6%) 2262 BCE 2205 BCE (92.8%) 2020 BCE 1995 BCE (2.0%) 1981 BCE
LTD001 C.3 sediment (Level 15–25 cm)	OES fragment	Poz-154234	3490 ± 30	1892 BCE (93.0%) 1740 BCE 1711 BCE (2.5%) 1699 BCE
LTD002 Surface find	Chaff-tempered pottery	Poz-0	HF <0.01mgC too small	–
LTD002 C.1 sediment (Level 10–15 cm)	OES bead by-product, overheated	Poz-154615	7980 ± 50	7050 BCE (89.1%) 6738 BCE 6731 BCE (6.3%) 6696 BCE
LTD002 C.2 sediment (Level 10–15 cm)	OES fragment overheated	Poz-154613	8490 ± 50	7594 BCE (95.4%) 7484 BCE
LTD002 C.3 sediment (Level 15–25 cm)	OES bead (5.4 mm)	Poz-154166	8520 ± 50	7600 BCE (95.4%) 7497 BCE
	OES bead (7.1 mm)	Poz-154233	8400 ± 50	7579 BCE (95.4%) 7346 BCE
	OES bead (6.5 mm)	Poz-153907	8465 ± 35	7586 BCE (95.4%) 7487 BCE
	OES bead (7.9 mm)	Poz-153912	8400 ± 50	7579 BCE (95.4%) 7346 BCE

SITES ASSOCIATED WITH PLEISTOCENE OCCUPATION

The presence of Palaeolithic artifacts was recorded at several locations scattered around in the desert part of the study area: LTD014, LTD019, LTD21, LTD029, LTD030, LTD032. Two of the currently examined sites revealed the presence of a greater number of stone artifacts.

The LTD030 site was most likely a workshop for the extraction and pretreatment of ferruginous sandstone. Although the surface of a small rocky outlier, approximately 50 m in diameter, is undoubtedly littered with intentional flakes, it was difficult to establish the formal technological and chronological affiliation of these workshops. However, they are very likely to be associated with MSA production. The site of Jebel Kobkabba, studied in the 1990s (Kobusiewicz and Kabaciński 1996), may be a direct parallel for LTD030, although sandstone outcrops were also used later, in MIS3 (sites in the Affad Basin, e.g., AFD131) and even later (making querns or even acquiring rock blocks for architectural purposes). However, the survey failed to relocate sites ROM212–215 (collectively designated as LTD029), where rich complexes identified with MSA, based on the processing of ferruginous sandstone, were registered in the early 21st century (unpublished data; M. Chłodnicki, personal communication).

The LTD014 site was defined by a set of a dozen stone artifacts made of chert and small fragments of fossilized animal bones. The finds were scattered over an area of approximately 100 m by 50 m, spread out along the edge of the former terrace and a much later (Holocene?) cut made by the river channel. This location resembles discoveries made in the Affad Basin, although much less of the former terrace has been preserved here. Merit-

Table 2. (continued from page 40)

LTD002 C.3 sediment (Level 15–25 cm) (continued)	OES bead (7.8 mm)	Poz-153913	8750 ± 5	8161 BCE (1.1%) 8142 BCE 8136 BCE (0.2%) 8131 BCE 7960 BCE (94.1%) 7598 BCE
	OES bed (7.3 mm) overheated	Poz-154614	7990 ± 50	7055 BCE (90.5%) 6743 BCE 6728 BCE (5.0%) 6698 BCE
	OES bead (6.8 mm)	Poz-153914	8480 ± 50	7594 BCE (95.4%) 7475 BCE
	OES bead (6.4 mm)	Poz-153911	8240 ± 40	7456 BCE (7.9%) 7408 BCE 7372 BCE (82.1%) 7134 BCE 7108 BCE (5.4%) 7079 BCE
	OES bead (7.3 mm) overheated	Poz-154226	8410 ± 50	7582 BCE (71.9%) 7448 BCE 7435 BCE (23.6%) 7350 BCE
	OES bead (7.6 mm)	Poz-153909	8160 ± 40	7321 BCE (22.7%) 7222 BCE 7198 BCE (72.7%) 7057 BCE

ing attention among the artifacts found on the surface are examples of bifacial processing of points several centimeters long, among others a Levallois point of a type not encountered at Affad [*Fig. 3*]. Considering the short distance to Letti, this could suggest a date other than MIS3 for the assemblage from LTD014.

The other four locations yielded single sandstone artifacts.

EARLY HOLOCENE SITES IN LETTI

Records of early Holocene settlement were observed in both the island and desert zones: LTI009–13, LTI015–16, LTI022, LTI028 and LTI031 on the island

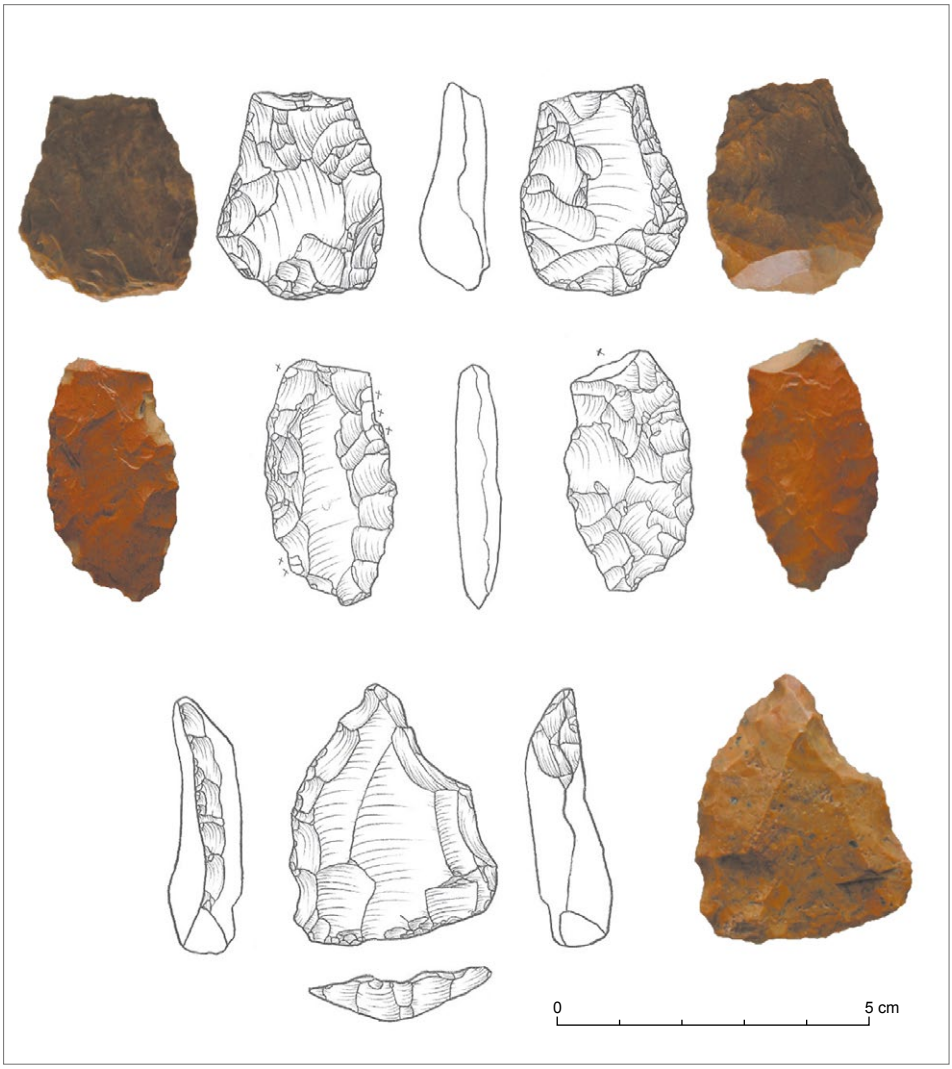

Fig. 3. Lithic tools from late MSA site LTD014 (IAE PAS | drawing M. Cendrowska, photos & processing P. Osypiński)

and LTD002, LTD016, and LTD017 in the desert area. The state of preservation of these locations differs. Agricultural erosion of sites on the island (LTI) has left few artifacts on the surface—single fragments of pottery, stone products and fossilized animal remains. Locations from the desert part of Letti, not endangered by modern (and ancient) cultivation, are preserved in slightly better condition. The state of preservation of layers associated with early Holocene settlement was tested archaeologically at the LTD002 site.

Excavations at LTD002

Recent earthworks had unearthed human bones on the flat surface of a small silt hilltop. A trench 10 m (N–S) by 5 m (E–W) was excavated in March 1922 [*Fig. 4*]. Levels were explored by troweling and all of the sediment was sieved. Archaeological material was collected from stratigraphic units (contexts) and layers (arbitrary levels approximately 5 cm thick).

Separate clusters of human bones were recorded at the western edge of the excavation and in the middle section of the southern part. Both were evidence of recent removal of bones from subsurface layers. The original positioning of the body could not be established [*Fig. 5*]. There was no burial equipment of any kind. Another cluster of human bones (Cluster 3) yielded evidently fragmented skeletal material, which had been deposited in a shallow ground cavity, approximately 20 cm in diameter [*Fig. 5* inset photo]. The primary nature of the burial is questionable.

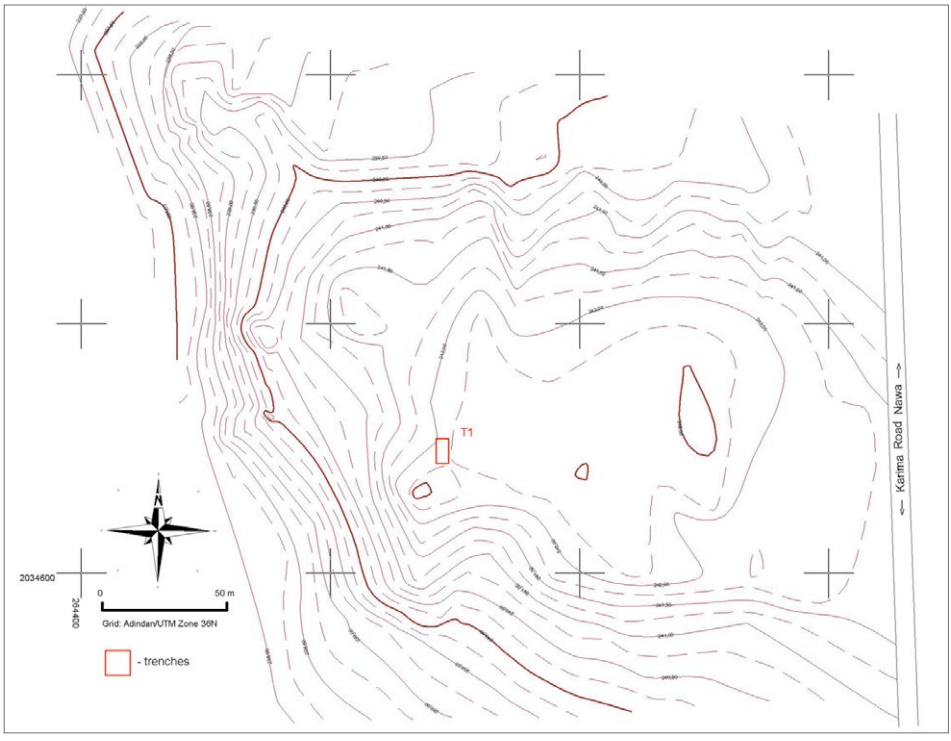

Fig. 4. Contour plan of site LTD002 (IAE PAS | mapping P. Wiktorowicz)

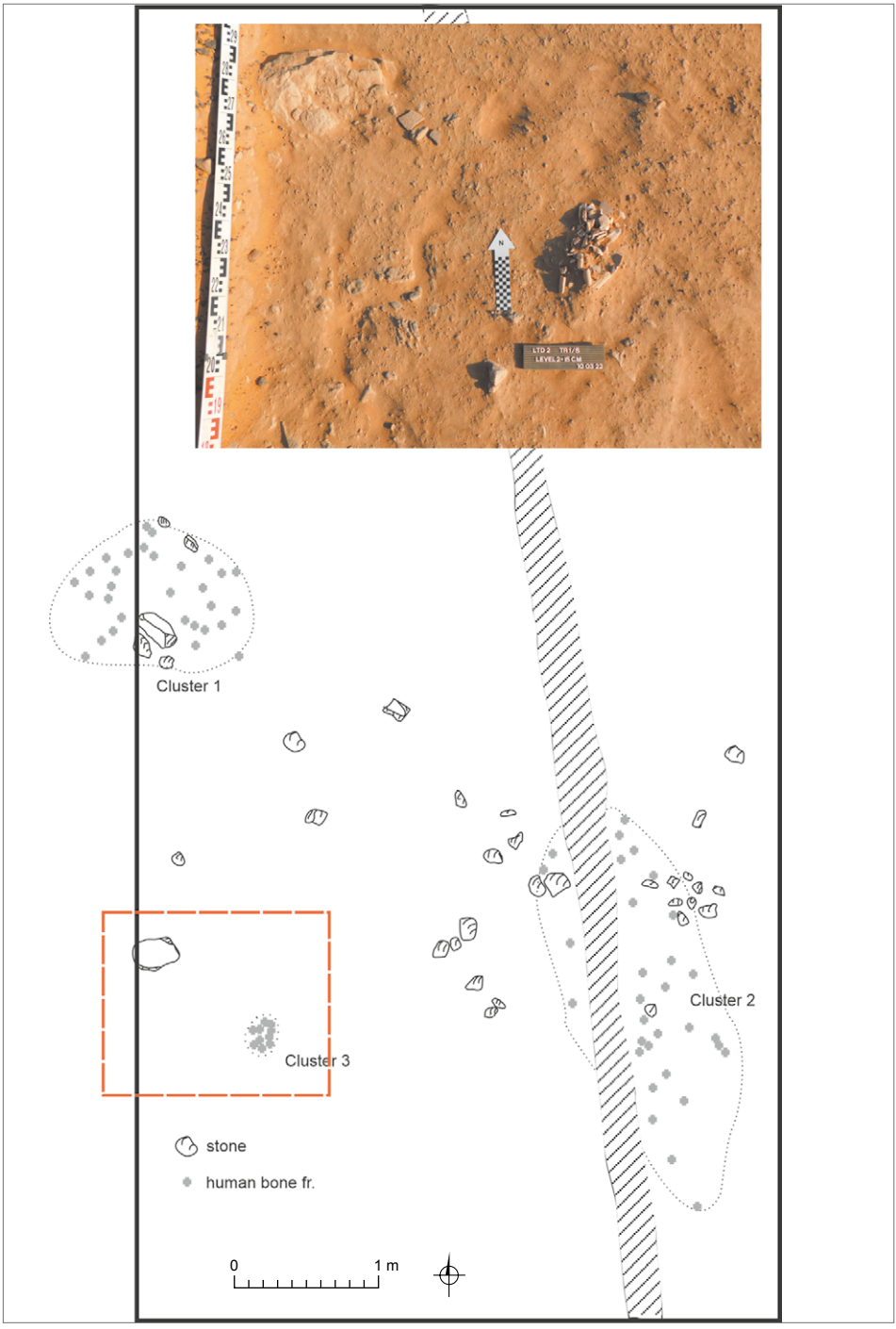

Fig. 5. Site LTD002: general plan of Trench 1; inset, cluster of human bones within a cut feature, location on site marked with a red frame (IAE PAS | photos and mapping P. Osypiński)

Artifacts collected from the layers included numerous beads made of ostrich eggshell and a fragmentary cowry shell [*Fig. 6*]. The closest source of cowry shells would have been the Red Sea coast.

Single larger stones seen on the currently exposed surface do not form any clear structures (pits filled with stones or fixed around fires). Further exploration of the stratum could clarify the issue in the future.

Preliminary analyses of the stone material indicate a relatively high level of expertise in producing microlithic blades, using a micro-burin technique for making very slender lunates and perforators [*Fig. 7*]. Surprisingly few quartz products have been noted [*Table 3*], unlike the early Holocene inventories known from Affad where quartz was the most typical raw material category.

A quartz palette and a so-called stone ring were identified among the macrolithic sandstone products [*Fig. 8*]. There were also a few fragments of querns/large palettes. All are commonly present in early Holocene assemblages linked to the Mesolithic Tergis Group (Hays 1971: 171, Fig. 8).

The pottery assemblage consisted of 1249 fragments. They were made of Nile silt tempered with medium and fine sand. Only three fragments contained a mica addition and three fragments with chaff temper were noted (^{14}C dating of one of these did not give satisfactory results). Surfaces are brown or greyish brown, unburnished. Vessel walls are thick, mostly 7–9 mm (average 7.95 mm). A group of vessels with very fine temper was also identified (3% of the assemblage).

Vessel shapes are simple, mostly open bowls with simple rims, occasionally decorated with oblique incisions. Sherds with surface decoration accounted for 70% of the assemblage, but it is reason-

Fig. 6. Selection of ostrich eggshell beads and a cowry shell fragment from LTD002 (IAE PAS | photo P. Osypiński)

Table 3. General structure of the lithic assemblage from site LTD002 after research in 2022

Raw material tested / Technological category	Quartz	Agate	Chert, burnt	Light chert	Chert	Ferruginous sandstone	Quarzite sandstone	Petrified wood
Cores	–-	5	41	–	100	1	–	–
Cortical butt flake	25	22	93	–	177	7	–	–
Plain butt flake	23	30	294	–	508	99	3	–
Prepared butt flake	–	8	88	–	106	28	–	–
Edge/point butt flake	5	27	150	2	254	14	2	–
Chips/chunks	44	84	452	–	470	22	5	5
Blade plain butt	–	–	18	–	35	–	–	–
Flake fragments	5	59	487	4	641	64	2	–
Tools	3	17	124	1	320	3	–	–
Rejuvenation elements	–	1	1	1	7	–	–	–
Total	105	253	1748	8	2618	238	12	5

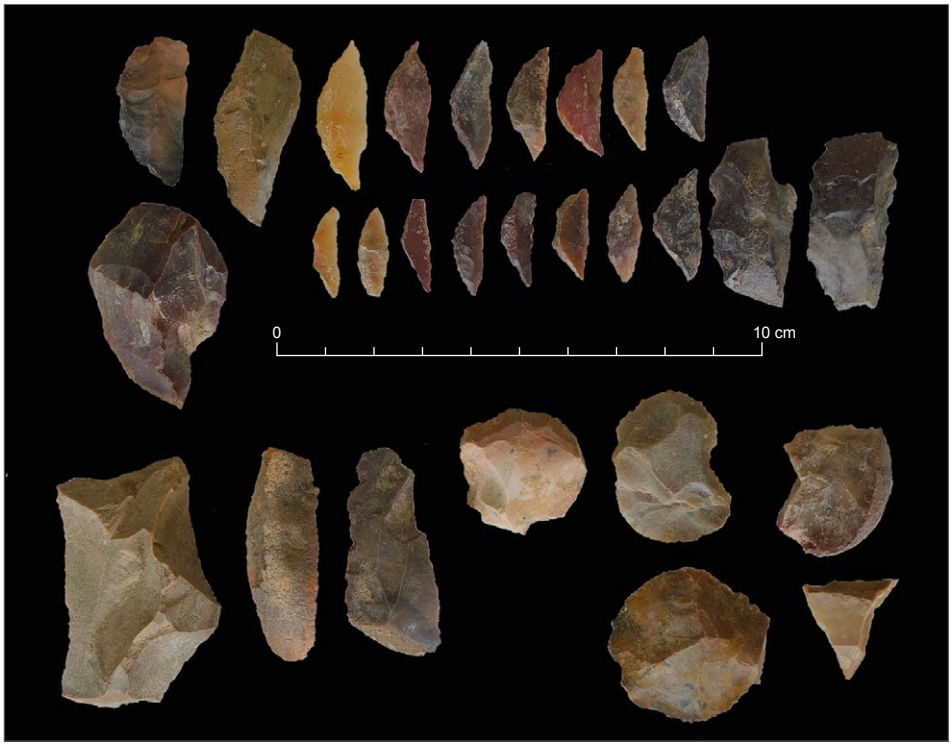

Fig. 7. Selection of microlithic stone tools from site LTD002 (IAE PAS | photo P. Osypiński)

able to assume that the plain sherds in this collection are actually part of decorated vessels, coming from zones between bands of impressed decoration. Bands (mostly horizontal) of impressed big dots are typical (86% of the decoration) [*Fig. 9*]. This type of decoration is associated with the Mesolithic Tergis Group (Hays 1971: 175, Fig. 10; Sadig 2010: 196–197, Fig. 6.42). Other types of decoration are rare. Bands of impressed dots produced by a rocker stamp account for 14% of the decorated sherds. Other kinds include the following motifs: dotted wavy line (3%), horizontal bands (8%), very fine rocker stamp, sometimes forming also semicircular panels (3%). The lattermost was produced of clay with very fine temper.

Of greatest interest was an incomplete (headless) zoomorphic figurine made of clay. It is a unique record of art practiced in early Holocene communities [*Fig. 10*].

Examination of the osteological finds—about 1000 identified animal remains—revealed not one bone of an undisputed domesticate. The hunted fauna represented in this assemblage corresponds to the ecosystem as we know it from much earlier Pleistocene sites in Affad, which indicates no evident climate change or a cyclical return to the former state. Remains of a large ruminant (ge-

Fig. 8. Selection of Mesolithic pottery sherds from site LTD002 (IAE PAS | photo M. Chłodnicki)

Fig. 9. Quartz palette, left, and stone ring from site LTD002 (IAE PAS | photo P. Osypiński)

Fig. 10. Clay zoomorphic figurine from site LTD002 (IAE PAS | drawing B. Piotrowska, photo M. Osypińska)

nus *Bos*) was noted next to smaller ruminants (kob, oribi, dik-dik) and wild pigs. There are also remains of freshwater and terrestrial fish and clams. An extensive collection of ostrich eggshell fragments (including finished beads; see *Fig. 6*) yielded radiocarbon dates between 7800 and 6800 cal. BC (median at 7500 cal. BC) [see *Table 2*].

NEOLITHIC SITES IN THE LETTI BASIN

Previously published research had raised hopes for the investigation of Neolithic sites, mainly a complex of several sites known as ROM200–205, redesignated now as LTI004, located in the Letti Island region (Chłodnicki 2001; Chłodnicki and Kabaciński 2003). Excavation by Krzysztof Grzymski's team in the 1990s uncov-

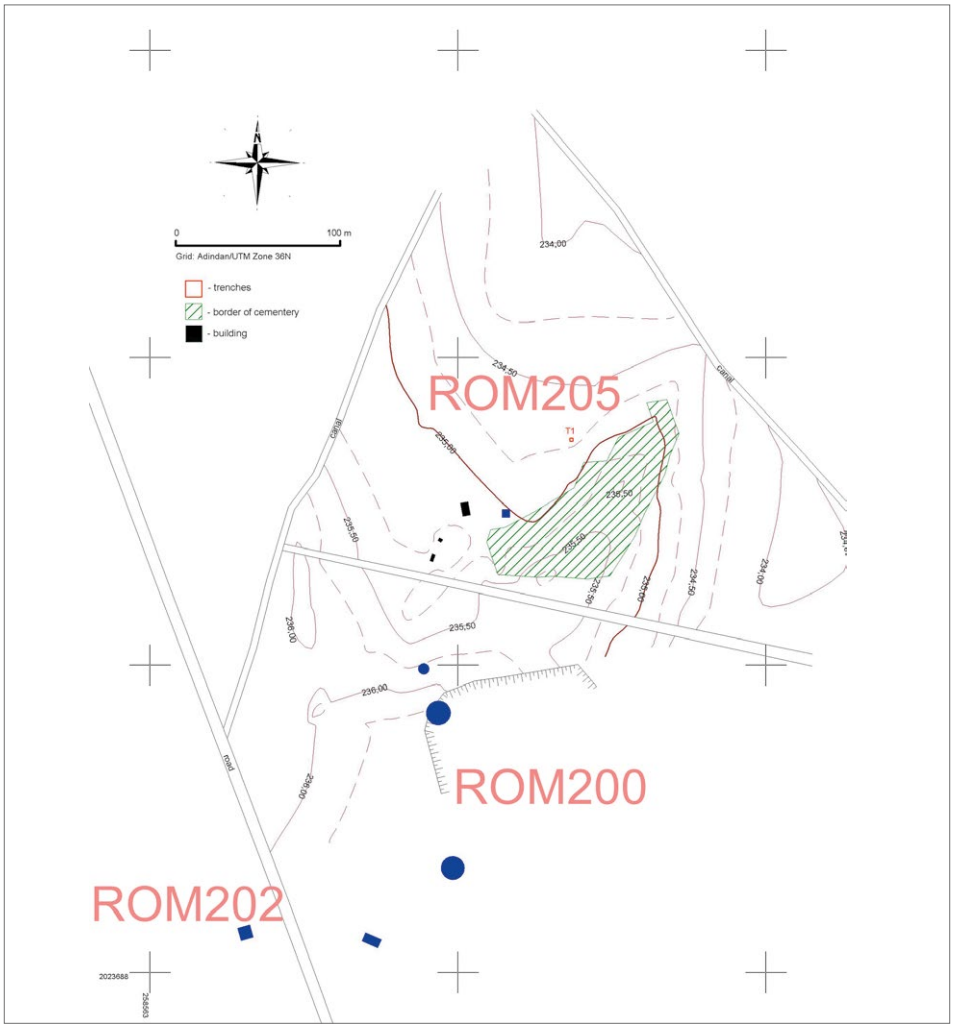

Fig. 11. General plan of site LTI004 (ROM200–205); features and trenches explored in 2001 marked in blue (after Chłodnicki and Grzymski 2018: Fig. 4; IAE PAS | mapping P. Wiktorowicz)

ered Neolithic artifacts, such as fragments of caliciform beakers, on the surface and in a drainage ditch (Usai 1998; 2001). The current prospection revealed the site to be largely damaged by agricultural installations under future fields, like in Affad. In addition, part of the site is certainly overlain by a modern Islamic cemetery [*Fig. 11*].

At site LTI004 (ROM200) two small clusters of prehistoric bones recorded on the surface prompted a decision to carry out rescue excavations before heavy machines destroyed the site. The test trench measured 2 m by 2 m. The bones proved to belong to an unspecified ruminant, but their highly fragmented state and partial petrification suggested a temporal relation to Neolithic settlement phase.

Single fragments of Neolithic vessels were found in loci LTI007, LTI011, LTI025, LTI030 and LTI033 in the northeastern part of the island. They occurred usually in context with the much more numerous remnants of Kerma-horizon settlement.

It also became clear that the construction in 2009 of an asphalt road between Nawa and Karima had destroyed parts of rich Neolithic sites ROM222 (=LTD022) and ROM229 (=LTD021) known from the desert zone.

All in all, it turned out that all of the previously known locations from the Neolithic period have been significantly damaged or are no longer accessible for research.

KERMA-HORIZON SETTLEMENT IN LETTI

The missing component from research in the Affad Basin were sites that could be associated with the Kerma period. This absence of sites post-dating the Neolithic period had already been noted over a broader area, including the Southern Dongola Reach Survey and other projects working on the other side of the Nile (e.g., Multaga). Therefore, the identification of Kerma occupation in the Letti Basin has shed some light on the issue of the actual extent of Kerma settlement in the 3rd–2nd millennia BCE in teh region between the Third and Fourth Nile Cataracts (Chłodnicki and Grzymski 2018).

Fragments of Kerma pottery were recorded in small quantities in the southern part of Letti (LTI002), where the presence of several tumulus cemeteries (LTI004, LTD027 and LTD033) of a presumed Kerman chronology was also noted. Quite a large number of finds comes from the middle part of the island around Kadakol hill (LTI017, LTI018, LTI019, LTI023, LTI025, LTI027), but site preservation here is poor due to intensive settlement in later periods. In-depth research on site LTI019 (Kadakol) showed that the Kerma material appears only in secondary contexts of very numerous Kushite and Christian burials (see Bobrowski et al. 2022, in this volume). Numerous and well-preserved relics of Kerma settlement were registered in the northern part of the region, both in the island part and at the desert edge (habitational sites LTI030, LTI032, LTI034, LTD001, LTD011, LTD015 and another tumulus cemetery LTD006).

Excavations at site LTD001

The site is situated on a small, sandy hill, at the edge of a former river terrace, partly overlapped by a modern Islamic cemetery [*Fig. 12*]. Buildings belonging

to the village of Letti Gism 1 are located 300 m southeast of the site.

A trench 5 m by 5 m in size was opened in the part of the site where modern graves were not visible on the surface. Arbitrary levels from 5 cm to 15 cm thick were explored. Each sediment unit was sieved and all five levels documented in drawing and orthophotography.

Identified features include two graves (Islamic, not marked on the surface), some pits, a hearth and post-holes. The lattermost were mainly oval in shape, measuring up to 25–35 cm across. The fill in the various cuts was mostly homogenous, with the exception of two contexts, C.18 and C.11, where interstratified layers of ash, radiocarbon dated to 2205–2020 cal. BC, were clearly visible. However, the larger domestic feature, C.2, registered just under the surface (about 0.40 m above hearth C.18), was dated to 1618–1497 cal. BC. Small, circular post-holes were filled with uniform gray sand or sand with stones (e.g., contexts C.5 and C.6 [*Fig. 13:b*].

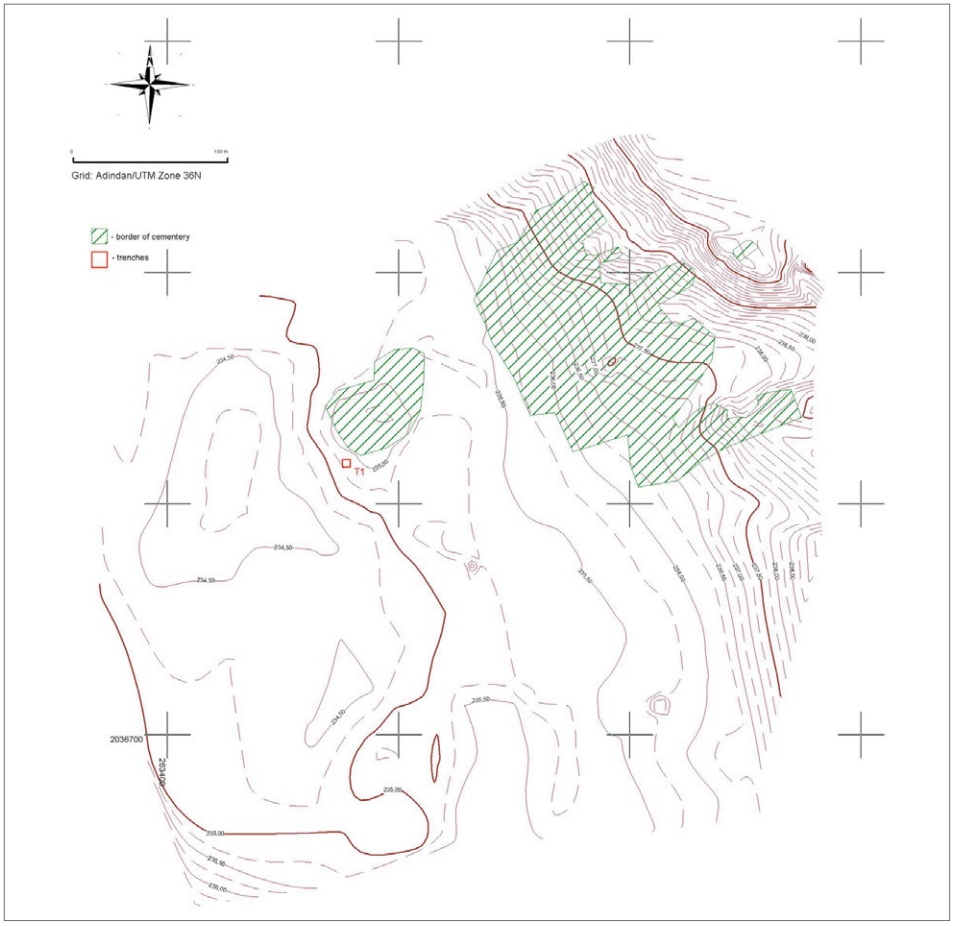

Fig. 12. General plan of site LTD001 (IAE PAS | mapping P. Wiktorowicz)

The small finds assemblage was dominated by pottery (1923 fragments) [*Fig. 14*] and lithic material (2039 artifacts and their fragments). Animal bones (the vast majority belonging to small ruminants, that is, goats and sheep) were also noted. Single clay pellets, shells, beads made of ostrich eggshell and a copper alloy (context C.11) and a fragment of a ceramic disk were recorded.

Several different classes of pottery were distinguished, as follows:

– fine well polished pottery with very fine temper (14% of the sample). Surfaces are red (sometimes brown), black or with a grey band between the red and black. Wall thickness is within the range of 2–6 mm. These sherds come from black-top beakers. The same group includes well polished pottery

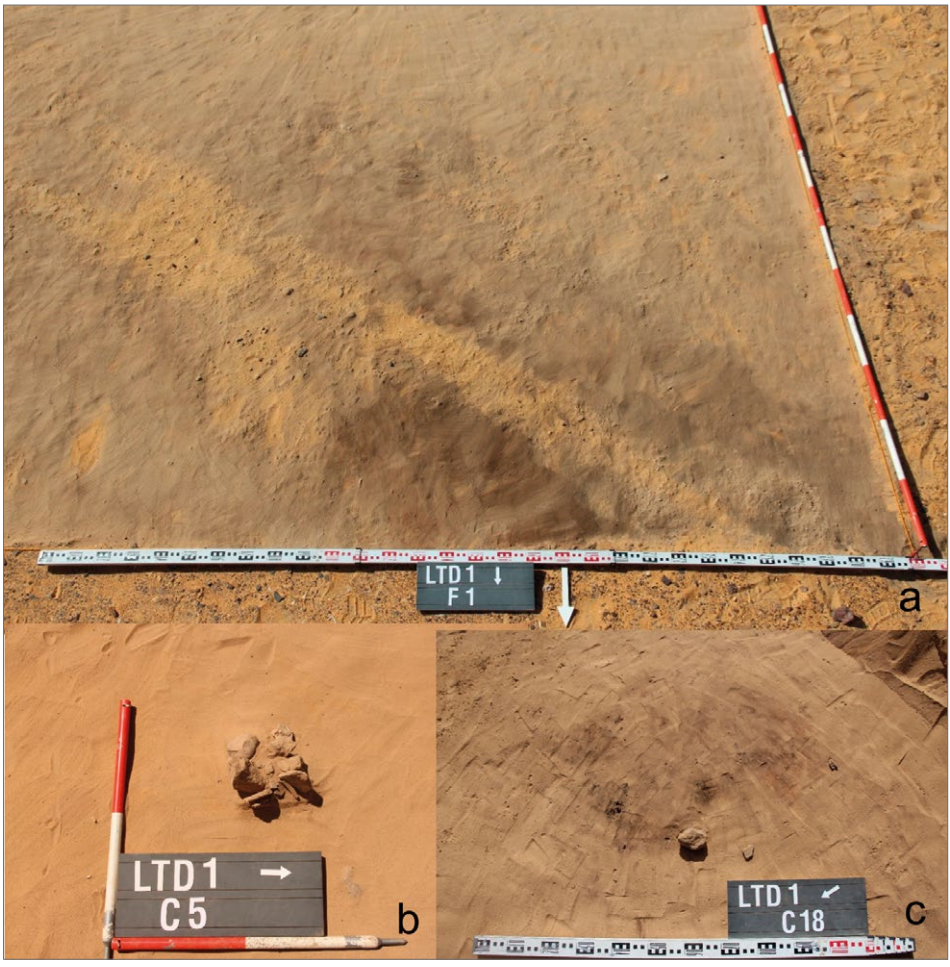

Fig.13. Kerma period features: a – LTD001, brown fill of a possibly domestic feature (C.2); b – cluster of stones and pottery fragments in a post-hole (C.5); c – ash in the fill of a hearth (C.18) (IAE PAS | photo J. Kokolus)

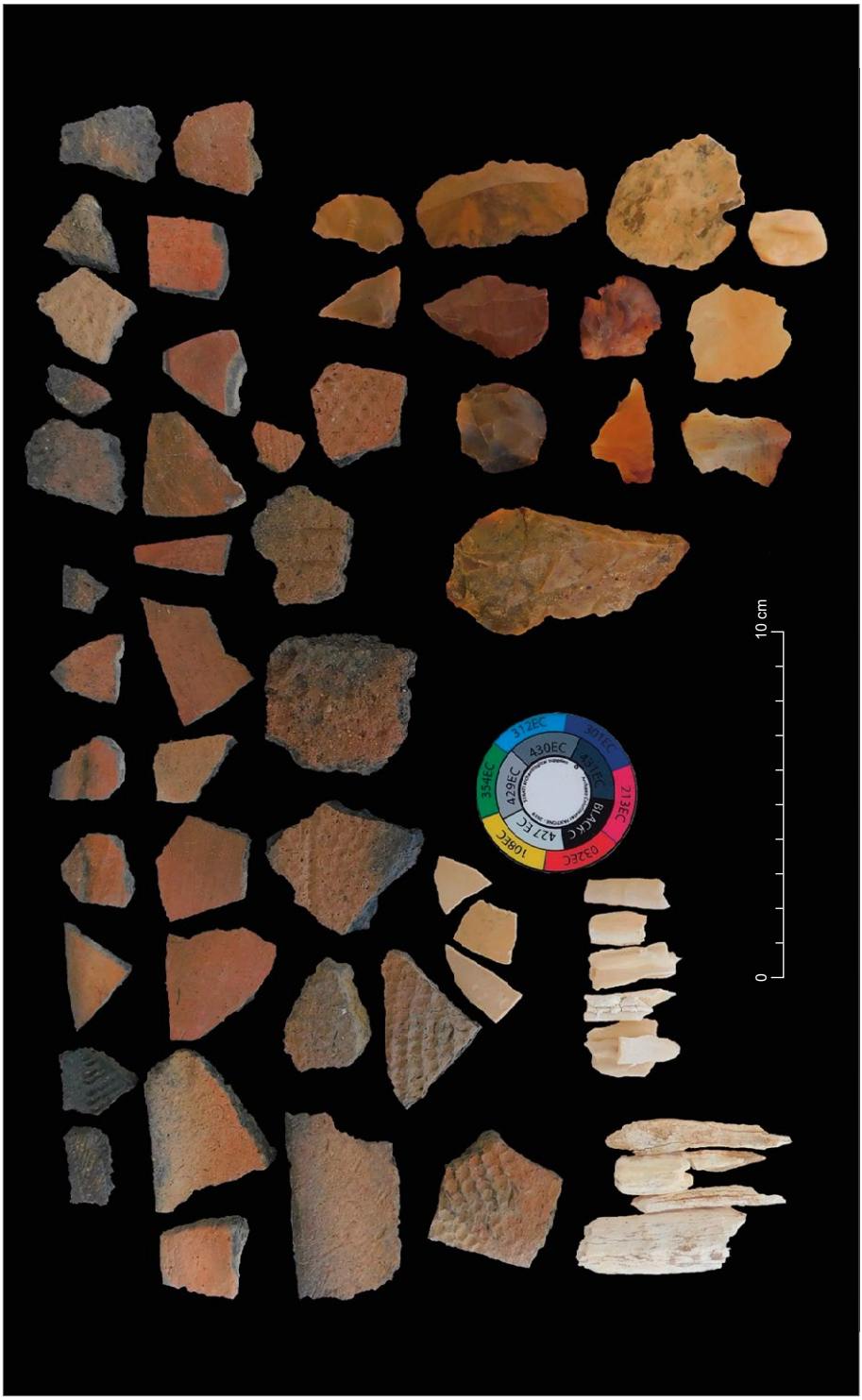

Fig. 14. Selection of materials from the LTD001 excavations (IAE PAS | photo P. Osypiński)

with fine temper and both black surfaces, the rims slightly thickened.
– fine brown pottery with polished or smoothed surfaces (11% of the sample). Break and interior surfaces are black, the temper very fine. Wall thickness is mostly 4–6 mm.
– thick-walled pottery, red-slipped on the outside, black or brown inside (9% of the sample). The break is black with fine mineral and organic temper. Wall thickness is mostly 6–10 mm. Thickened rims are decorated with oblique comb impressions.
– coarse brown ware (at 41% of the sample it is the most common category). Brown or greyish brown surfaces on the outside, greyish-brown to brown on the inside. The break is black with fine and medium-size, mineral and organic temper.
– pottery with fine mat impressions (second most popular category at 21% of the sample). Mat impressions cover the entire outer surface, sometimes with an additional row of deep dots near the rim. The outer surface is greyish-brown to brown, the inside dark grey to black. The break is black with abundant medium-size chaff temper.
– vessels with coarse mat impressions are rare (1% of the sample). Surfaces are brown or greyish brown both outside and inside. Breaks are from dark brown to black. Fine to medium-size mineral temper has been recorded.
– pottery decorated mostly with incisions, sometimes comb impressions (about 3% of the sample). Preserved only as small fragments.

This material has been dated to the classical phase of Kerma culture.

DISCUSSION AND CONCLUSIONS

The first field season of the Letti Project, which consisted of a comprehensive survey of archaeological sites and collecting data regarding their state of preservation, has already contributed to a growing understanding of the prehistory of this region. Based on current findings more can be said on Pleistocene settlement in the region downriver from Affad in light of the results generated by the PalaeoAffad project. Issues related to early Holocene pottery from the Tergis Group and late prehistoric funerary customs in the Letti region can also be discussed. Of greatest significance, however, is the faunal material, which has reopened the debate on indigenous African cattle domestication in Northeast Africa.

PLEISTOCENE REMAINS IN LETTI

The relationship between the current and early Holocene channels of the river (OSL dating results in press; A. Obłuski, personal communication) and the edge of the rocky plateau in Letti is different than in Affad. In Affad, the width of the so-called Pleistocene terraces is measured in kilometers, while in Letti preliminary observations suggest relics of similar alluvia only several dozen meters wide. An analogous situation occurs even further north, that is, downriver from Letti, at Kawa, where a puzzling absence of Palaeolithic sites has been noted (Welsby 2001). As at Affad, relics of Pleistocene settlement could have survived only on the surface of such deposits. The LTD014

site appears to be the only place fulfilling the conditions for preserving relics of Palaeolithic settlement in an original depositional context. To confirm this assumption, it would be necessary to establish the absolute chronology of the silts forming undulated inselbergs at the edge of the valley. At the same time, it would be advisable to take a closer look at the other side of the valley, where the preservation of the terraces may create better conditions for the preservation of Pleistocene sites. This will contribute significantly to recreating not only the history of human occupation, but also the past of the river Nile itself, an extremely complex ecosystem creating conditions for existence, but also forcing the migration of countless living organisms.

TERGIS GROUP POTTERY AND EARLY HOLOCENE SETTLEMENT IN LETTI

With most of the attention this season focused on the issue of early Holocene settlement in Letti and its relics studied at the LTD002 site, it is only natural that apart from direct sources of a biological nature, new data has also appeared concerning ceramic production.

Pottery that is tentatively referred to as the Tergis Group has been the object of a scientific debate since the 1960s (Marks et al. 1968; Hays 1971), even though no assemblages dominated by products of this particular workshop were known. The context of the collection from site LTD002, following the present archaeological testing, enables two things: a much better delineation of the range of decoration variations and manufacturing techniques of the so-called Tergis Group, and an absolute chronology, especially in relation to the known chronological framework of the earliest pottery from the Middle Nile valley (Gatto 2006). In effect, the results should fill a gap in what is known about early Neolithic technological traditions and settlement in general between the 8th and 5th millennia BCE, thus moving back the earliest phases of Neolithization in the region.

INDIGENOUS AFRICAN CATTLE DOMESTICATION – A RETURN TO THE DEBATE

The faunal remains recorded from site LTD002 have inspired a return to the discussion of cattle domestication processes in this part of Africa. The early Holocene animal bone collections studied hitherto, both from Affad and from more distant locations (Khor Shambat, el-Khiday), did not contain remains of large ruminants from the *Bos* family. So far, the finds from el-Barga (Chaix and Honneger 2014), dated to the 6th millennium BCE, were the only reference for the claim that early Holocene communities on the Nile showed a broader interest in this animal group, extending beyond the material aspects, that is, cattle as a source of meat, and into the symbolic layer. Now, the new findings from the Letti Basin, added to the records from Affad (Osypińska et al. 2021), may also be a reference for wild(?) cattle in the late Pleistocene regional faunal inventory.

In the context of the new discoveries, at Affad and Letti, discoveries of *Bos* remains, at both late Pleistocene and early Holocene sites south of Third Cataract, it seems justified to raise again the issue of the origin of cattle in Northeast Africa. The idea of domestic cattle in Africa coming from the Fertile Crescent exclusively is

now seen as having serious shortcomings. These issues have already been discussed repeatedly (e.g., Grigson 2000). Foremost, due to issues of preservation in hot climates, the genetic data considered is not older than 300 years. Taking into account bottleneck phenomena, pandemics and the dynamics of change in cattle populations in Africa, especially in the colonial era, genetic identification of modern cattle in Africa as originating exclusively from the Middle Eastern taurine and zebu does not raise any objections. However, there is no reliable data on cattle bred by Neolithic or Kerma, or even medieval (sic!) communities.

Moreover, with regard to changes in the morphology of African early domestic cattle, it should not be forgotten that the current dominant image of the trajectory of such changes comes from analyses of Middle Eastern osteological finds (e.g., Lasota-Moskalewska 1994). The animals in question were most likely barracked and selected to meet behavioral requirements of the proto-town populations. Intensive breeding in Middle Eastern communities resulted in drastic changes, both morphological and physiological, one consequence being a marked reduction in individual animal proportions, body size and horns. In Northeast Africa in the early Holocene, human communities did not live in such "tight" forms of settlement, and the dominant model of environmental adaptation was rather mobile pastoralism. There was no great pressure, or at least not comparable to that in the Middle East, to alter cattle morphology and physiology. Instead, one can assume that the life behavior of aurochs and early cattle did not change drastically in such a breeding model. Increasingly abundant osteometric data on early African cattle reveal numerous primigenic traits. As indicated, for example, by the data from Wadi Khashab (Osypinski et al. 2021), African cattle in the 5th millennium BCE was characterized by specific morphological features, such as strongly pronounced long-leggedness clearly differentiating these varieties from the Middle Eastern taurine.

Also, the huge cultural role of cattle in the early Holocene Sahel communities prompts a reconsideration of the origins of cattle in Africa. In the context of discoveries made in the Middle Nile Valley (Affad and Letti), the issue remains open to discussion. At least some answers can be expected from further research in the Letti Basin, including planned microresidue (lipid) studies on ceramics from site LTD002 and enamel isotopic composition analyses designed to show whether the diet of animals of the *Bos* genus was identical or different from their wild (undoubtedly) ancestors from Affad. Premises of this kind have just been published for Mesolithic materials from al-Khiday (Dunne et al. 2022), proposing the area of Wadi Howar and el-Barga as the source of this evidence. Data for comparative research could also come from an analysis of samples from local but later collections (including the Kerma site at LTD001).

LATE PREHISTORIC FUNERARY CUSTOMS IN LETTI

The clusters of fragmented human bones found at site LTD002 clearly cannot be called primary burials, but they open the question of burial customs in the Letti region in late prehistory. A similar re-

cord was discovered at the MG4 = Arg113 site (Osypiński 2002; Żurawski 2003: 201) where research will be resumed. However, this way of treating human remains stands in clear opposition to burials from a similar period in el-Barga (Honneger 2004) or the Sixth Cataract (Varadzinova and Varadzin 2020).

Was this a local emanation of the funerary ritual, specific only to this community? Or is it the effect of the still limited scope of research carried out on this site? Slightly later cemeteries from Affad, Multaga (Geus and Lecointe 2003) and R12 (Salvatori and Usai 2008) have already indicated the dominance of a ritual burying a complete body in a burial pit at least from the 5th millennium BCE. Cemeteries of small stone tumuli, which are assigned to the Kerma horizon (by analogy with the rich records from the Fourth Cataract; Borcowski and Welsby 2012), also require further research. Doubts of this kind can only be dispelled by archaeological excavation, although the presence of a richly represented settlement from the Kerma period (numerous sites, including LTD001) significantly enriches current ideas about the range of this culture, while shrouding in even greater mystery the absence of material evidence of its presence upriver, reaching to the Fourth Cataract.

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