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# QUATERNARY PALEOENVIRONMENTS AND PREHISTORIC HUMAN OCCUPATION OF NORTHERN SOMALIA

## Introduction

During the first half of this century, Somalia was found to contain a vast array of prehistoric data ranging from Acheulian sites to Neolithic rock art (e.g. Graziosi 1940, 1954; Clark 1954). In the last three decades, however, paleoenvironmental and prehistoric archaeological research has failed to keep pace with the rest of the continent. Consequently radiometric ages from prehistoric sites were nonexistent, while much of Somalia still remained archaeologically unexplored. From February through March 1982 the University of Georgia Departments of Anthropology and Geography and the Somali Academy of Sciences and Arts conducted paleoenvironmental and prehistoric archaeological research in northern Somalia, the major objectives of which were to

- locate sites that could provide radiometrically datable paleoenvironmental and cultural sequences;
- assist in the training of Somalis in archaeological and geomorphological field methods.

Physiographically northern Somalia can be divided into two regions:

- the flat coastal plain and foothills of the "Guban" bordering the Gulf of Aden;
- the Somali Plateau lying to the south of the main faults of the Gulf of Aden trend (Pallister 1963).

The Somali Plateau, composed largely of Eocene limestones and anhydrites, is topographically diverse and ranges from the northern maritime mountains that reach over 2000 m in



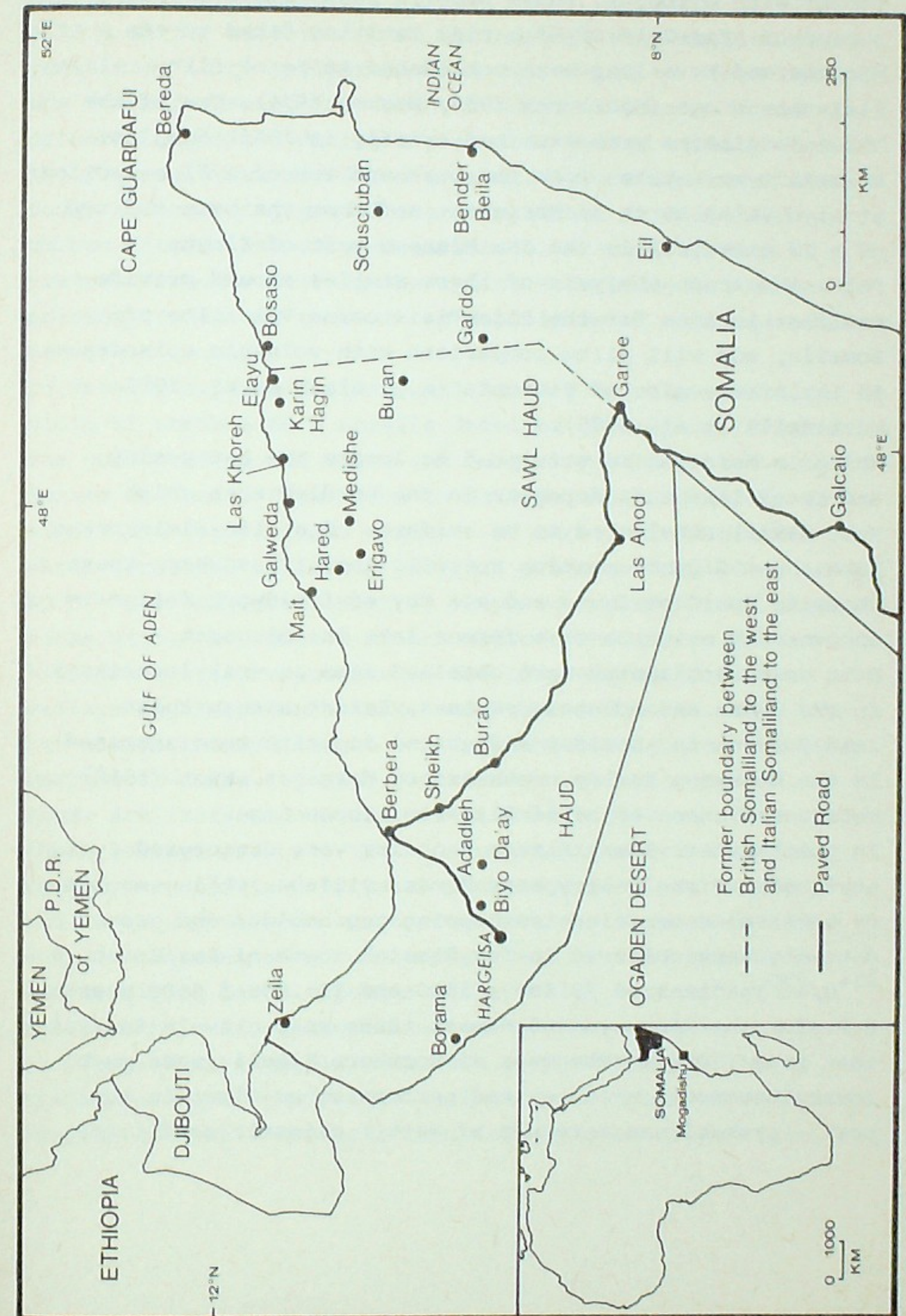
elevation to the flat monotonous "Haud" and "Sawl Haud" plains of the south. Long and narrow "tugs" (wadis) formed by seasonal rivers dissect the plateau and Guban, resulting in intricate drainage systems. Vegetation and climate are greatly affected by altitudinal changes as the bush and thickets of the hot, arid coastal plain give way to the shrubs and trees of the subdesert foothills, the evergreen scrub and juniper forests of the highlands and the open woodland and grasslands of the interior plateau (Hemming 1966; Pichi-Sermolli 1955). Pastoral nomadism represents the most important human adaptive strategy to these environments, although farming is increasingly being practiced in the relatively well-watered regions of northwestern Somalia and the mountains of the northeast.

In 1980 a rapid survey of the northeastern highlands between Erigavo on the plateau and Las Khereh on the Gulf of Aden (figure I) resulted in the discovery of a series of caves and rockshelters, many of which revealed surface scatters of Middle to Later Stone Age artifacts and fossilized bone (Brandt 1980, 1981). This ecologically diverse region of northeastern Somalia, where less than 60 km separate the coastal plain from the mountains and interior plateau, was selected as our primary 1982 study area. One week was also spent in northwestern Somalia conducting a brief reconnaissance of selected localities in the region bounded by the towns of Hargeysa, Berbera and Sheikh (figure I). The following discussion summarizes the major finds of the 1980 reconnaissance and 1982 field season (Brandt and Brook, in press).

#### Geological and Paleoenvironmental Research

Basalts of the Afar (Aden) Volcanic Series are represented at three main localities in northern Somalia: in the Jau

Figure I. Location map of northern Somalia





Plateau south of Elayu; north of Hargeysa; and along the border with Djibouti. These basalts post-date a major period of Afar-Gulf of Aden rift faulting dated to the Miocene and have long been considered to be of Plio-Pleistocene age (MacFadyen 1933; Mackey 1954). Two of the three localities were examined briefly in 1982. Samples of basalt were taken from the base and top of a 71 m section at Biyo Da'ay north of Hargeysa, and from the base and top of a 12 m section in the Jau Plateau west of Elayu.

Potassium-argon analysis of these samples should provide radiometric ages for the Plio-Pleistocene Volcanics of Somalia, and will allow comparison with volcanic episodes in the Afar region of Ethiopia (e.g. Black et al. 1975; Morbidelli et al. 1975).

While in Hargeysa we attempted to locate the peaty clay and coral-like tufa deposits in the Adadleh area which Hunt (1958) considered to be evidence of a Plio-Pleistocene lake. Hunt did not mention specific localities where these deposits could be found and one day of fieldwork failed to uncover any evidence of a former lake in this area.

Data on paleoclimates were obtained from several localities in the Guban and mountain regions. Relict stream tufas laid down on tug boulder and gravel deposits were examined in the Heneweyn Valley northeast of Hargeysa. Hunt (1958) considered these to be of Plio-Pleistocene age.

In northeastern Somalia tufa deposits were discovered just north of Medishe Valley near Hamaas village, while secondary limestones or calcretes capping tug boulder and gravel deposits were observed in Tug Damaleh south of Las Koreh.

$^{234}\text{U}/^{230}\text{Th}$  dates of  $79,100 \pm 3850$  and  $115,900 \pm 6400$  years B.P. for the Heneweyn and Hamaas tufas respectively indicate that peak flows in the tugs of northern Somalia were much lower than today at these and perhaps other times in the past - probably as a result of wetter climatic conditions

with a more even distribution of precipitation throughout the year.

A 15 m thick, heavily eroded spring tufa with shallow caves containing large speleothems was discovered at Hared below the mountain escarpment north of Erigavo. This tufa was probably deposited during a period of wetter climate when the plateau above Hared had a denser vegetation cover than today and emerging groundwater was richer in dissolved carbon dioxide and calcium carbonate. A small spring emerges from the base of the relict tufa today but under present conditions there is no deposition of calcium carbonate.

To develop a paleoenvironmental history for the coastal plain of northeastern Somalia detailed geomorphic research was conducted in the Guban and coastal foothills between Bosaso and Mait. From Elayu to Galweda there is marine erosional and depositional evidence of three raised beaches which corrected altimeter profiles plate at 2 m, 10 m, and 20 m above sea level. West of Elayu wave-eroded rock platforms with 7 m high sea stacks are cut in Miocene Dubar limestones. Beach deposits of the 10 m sea stand flank valleys in Afar/Aden basalts and Dubar sediments. They contain large rounded basalt boulders indicating that the 10 m beach post-dates the Plio-Pleistocene volcanic episode. Stone artifacts and shells on the basalt plateau above these valleys indicate that the coastal resources of the region were utilized by Later Stone Age peoples. Between Las Koreh and Galweda stream-cut sections through the 10 m and 20 m beaches show tug boulders and gravels underlying and overlying beach deposits with corals, echinoids, lamellibrachs, and gastropods - some of the coral in growth position. This suggests that each beach was formed by a transgression of the sea and a later permanent regression. Samples of coral were collected from beaches at several



localities for uranium-series dating. These dates will allow a chronological history of Quaternary sea level changes to be developed for the northern Somali coast.

In many of the tugs dissecting the Somali plateau, we found thick boulder deposits forming a series of river terraces. These were particularly evident in the Tug Damaleh, north of Las Koreh. A survey of terrace elevations in this tug was made from the coast at Las Koreh for 10 km up-valley. The most significant terrace level was one ranging from 23 - 36 m above the present tug floor. This terrace ended down-valley in a huge relict alluvial fan.

The data from Tug Damaleh and other tugs in the north indicate that there was a major phase of aggradation in the past when thick boulder deposits accumulated. This phase was preceded and then followed by phases in stream incision.

Attempts were made to find material suitable for dating this phase of tug infill. At one site in Tug Damaleh, a cave travertine was discovered that was clearly deposited before the boulder fill stage.  $^{234}\text{U}/^{230}\text{Th}$  ages for the older and younger layers of this deposit indicate that both were laid down prior to 350,000 years B.P. North of Elayu tug boulder deposits are overlain by Jau Plateau basalt, a fact which might also suggest that the boulder deposits are of Plio-early Pleistocene age.

The most detailed paleoclimatic and paleoecological data for northern Somalia will probably be obtained from analyses of deposits in the two largest limestone caves we discovered. The first, Galweda Cave is located 1-2 km south of Galweda in the Guban desert region where rainfall is less than 100 mm per year. This cave is 50 m deep in Miocene Dubar limestones. The lowest passages are at or close to present sea level. The cave is dry and dusty today with no evidence of prehistoric human occupation.  $^{234}\text{U}/^{230}\text{Th}$

ages for two small stalactites ( $9500 \pm 800$  and  $9700 \pm 1100$  B.P.) indicate wetter conditions in the Guban at this time. The second cave, Hayla is located on the Somali Plateau a few kilometers north of the Medishe Valley where precipitation exceeds 400 mm. It is 80 m long in Eocene Auradu limestone and has an impressive 20 X 7 m entrance. The cave is located in the north wall of Tug Hayla 100 m above the floor and contains abundant and relict speleothems. A 1 m<sup>2</sup> test excavation near the center of the cave floor at Hayla reached bedrock at 35 cm and unfortunately failed to provide evidence of prehistoric occupation.

Additional uranium-series dates for speleothem calcite samples collected from Hayla and Galweda caves should provide important information about former wetter and drier phases of climate. Furthermore, it is hoped to develop relative and possibly absolute paleotemperature curves from  $^{18}\text{O}/^{16}\text{O}$  analysis of the Hayla samples, which may have been deposited in non-evaporative conditions. Finally, Brook et al. (1982) have recently demonstrated that cave speleothems often contain pollen. If the samples from Galweda and Hayla Cave contain pollen, paleoecological data may also be obtained from these deposits.

#### Archaeological investigations

Although Oldowan-related occurrences have recently been reported from the Plio-Pleistocene deposits of neighboring Ethiopia and Djibouti (Roger et al. 1975; Clark/Harris 1983) they have yet to be discovered in Somalia. Our brief reconnaissance failed to reveal such artifact occurrences or fossil-bearing localities, but only three days could be spent in exploration and therefore considerably more time and effort will be needed to gauge the paleoanthropological potential of the Plio-Pleistocene deposits of northern



Somalia.

Several Acheulian localities have been reported from north-western Somalia, but most are surface occurrences and their contexts are poorly known (Clark 1954). A brief attempt was made to locate the important Acheulian site in Tug Issutugen discovered at the turn of the century by Seton Karr (1896, 1898), but only diffuse surface scatters of Later Stone Age artifacts were found. A rapid survey of the eroded alluvium east of Sheikh where Acheulian artifacts had previously been recovered (Clark 1954:34-35) resulted in the discovery of a chert cleaver and Later Stone Age artifacts from the surface, but none were found in situ. In 1980 a heavily abraded basalt handaxe was discovered on the surface of Plio-Pleistocene basalts at Biyo Da'ay north of Hargeysa, but a brief visit to this locality in 1982 did not yield any further Acheulian artifacts. However, an extensive lithic scatter of Middle Stone Age artifacts, including chert bifacial points, scrapers and Levallois cores was observed near the northern edge of the gorge and a sample collected.

At Medishe 2, one of 16 limestone caves discovered in the Medishe Valley northeast of Erigavo, four contiguous 1 X 2 m test units were excavated to a maximum depth of ca. 1 m before hitting bedrock at the northern end of the excavation or an artifact bearing breccia towards the south. The cave, which measures six by eight meters, is situated about eight meters above the floor of a steep walled valley which contains one of the few perennial streams in the area. The stratified deposits are composed largely of silt and rockfall but also contain chert artifacts, bone, shell and charcoal. The depositional history of the cave sediments is complex and includes periods of brecciation and resolution.

A detailed lithic analysis of the Medishe material is current-

ly underway and consists of an attribute analysis of approximately 2000 tools, cores and whole flakes, and a less detailed analysis of the remaining 6000 pieces of unmodified waste. While definitive results are not yet available some observations and tentative conclusions can be drawn at this time. The artifacts are predominantly of Middle Stone Age affinity and include Levallois points, blades, flakes and cores, unifacial and bifacial points, notched and plain scrapers and rare perforators and composite tools. The upper levels contained Later Stone Age artifacts such as end scrapers, diminutive blades and microliths. Many of the artifacts have been burned and fire cracked and a large percentage are broken, abraded or edge damaged.

Radiocarbon dates of  $18,870 \pm 340$  years B.P. (UW - 787) on charcoal recovered from the middle of the sequence and  $> 40,000$  years B.P. (UW - 761) from charcoal in the lowest stratum indicate that the cave was utilized over a long span of time. Medishe 2 represents the first excavated site in Somalia to produce a stratified, radiometrically datable Upper Pleistocene sequence and therefore promises to provide valuable new data on late Quaternary culture, history and socio-economic change in East Africa and the Horn.

The site of Gud-Gud, initially discovered in 1980, is a large cave located in the limestone foothills south of Las Koreh. It is situated about 350 m above sea level and approximately 50 m above Tug Damaleh/Kal Adoti, a seasonal watercourse with permanent pools. The cave is 25 m deep and 15 m wide with an opening 9 m high. Virtually the entire surface of the cave was covered by a layer of goat/sheep dung, attesting to its present use by local herders.

A single 1 X 3 m test trench was excavated to bedrock c. 2 m below surface. Although the upper 1.5 m of deposit composed



of rockfall and silty sand was culturally sterile, below this was a diffuse occupation horizon composed of a small sample of laked stone artifacts, faunal remains and charcoal. A charcoal sample obtained from the top of the occupation horizon has yielded a radiocarbon age of  $>40,000$  B.P. (UW - 762). Unfortunately the stone artifact sample is too small for taxonomic purposes (less than fifty artifacts were recovered) but includes chert flakes and blades, a burin and one end scraper, all of which lack evidence of prepared core preparation. Further excavations are planned for this promising site.

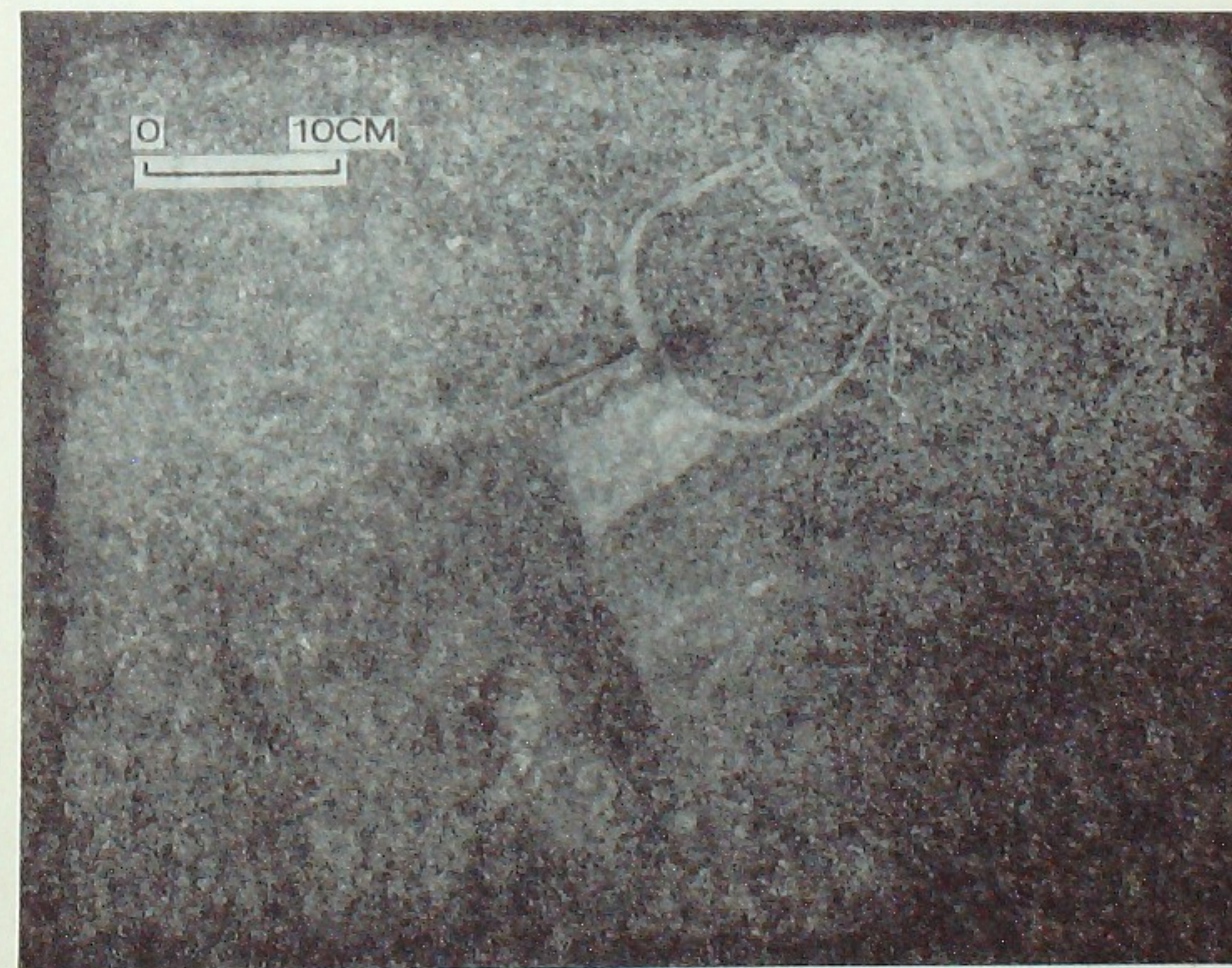
Situated on the coastal plain approximately 70 km southwest of Bosaso is the prominent tor of Karin Hagin. The tor guards a natural pass leading into the neighboring mountains and is composed of a series of large granite boulders that form the walls of numerous rockshelters. A 1 X 2 m test excavation in the small floor of one shelter uncovered evidence of human occupation to a depth of c. 1 m, at which point a sterile unit was reached. A microlithic Later Stone Age industry with rare pottery sherds was recovered, and on the basis of a preliminary examination is comparable to the "Somaliland Wilton" (Clark 1954:260-292).

Two radiocarbon determinations of  $2060 \pm 65$  B.P. (UW - 764) and  $1627 \pm 130$  B.P. (UW - 763) have been obtained from charcoal in the middle levels of the deposit. Small quantities of shell and bone were also recovered and when analyzed should provide economic data.

Along the western wall of the same shelter is an extensive series of mono- and polychrome paintings. Originally discovered by a geologist in 1947 (Clark 1954:303; Gellatly 1961), the majority of the paintings is of long-horned humpless cattle, but also depicted are goats and/or antelopes, at least one dromedary camel, human figures and other motifs painted in red, cream and various shades of brown

(Figure 2). There is little evidence of superimposition, but at least two stylistic phases appear to be represented. The rock art was traced onto mylar film and is currently undergoing detailed analysis. Stylistic similarities with the rock art of Ethiopia and northeastern Africa as well as the absence of humped Zebu-type cattle strongly suggest that the paintings are of Neolithic age (Brandt in press (b)). Since the origins of domesticated camels in the Horn of Africa are still poorly known (Bulliet 1975; Brandt in press (b)), of particular interest is the apparent contemporaneity of the camel illustration with humpless cattle.

Figure 2. Part of the central frieze of paintings on the west wall of Karin Hagin rockshelter. The human figures and the cow's body and head are painted in red, while the unidentifiable illustration above the horns, and the neck and horns of the cow are cream colored. Note the decorative cord and "tassels" spanning the horns.





Other rock art sites discovered in northeastern Somalia include:

- three small caves north of Medishe in the Hayla valley, each displaying a small series of painted black humpless and humped cattle;
- geometric engravings on a wall at Jiral rockshelter, situated just south of Hared spring;
- Geelkuqoran, a steep rock wall in the coastal foothills southeast of Mait where an extensive series of pecked engravings, including camels and human hands, are depicted (Brandt 1980, 1981).

Although a more thorough discussion of the significance of our finds must await completion of detailed analyses, it is clear that northern Somalia holds great promise for providing valuable new data on Quaternary paleoenvironments and the tempo and mode of human cultural evolution in East Africa and the Horn.

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