A million years back... in the Danakil Depression of Eritrea

Written by Tsegai Medin
Monday, 14 September 2015 09:22 - Last Updated Monday, 14 September 2015 09:27

While Eritrea is often described as one of the youngest countries in the world, archaeological evidence shows it has a rich, long history.

The Eritrean Danakil Depression which is part of the vast depression of the Danakil is located at the northern apex of the Afar region, a quasi-triangular shaped area at the intersection of the Red Sea, the Gulf of Aden and the East African Rifts (see, Fig. 1). This Depression is characterized by sedimentary environments dominated by alluvial fans and high energy streams, with some swampy to lacustrine ponds. The development of this mainly lacustrine scenario in the Dandiero Basin suggests a tectonic influence on changes in depositional environments. Generally, the Buia environment was characterized by availability of freshwater ponds and grassland (savannah) environments developed on adjacent coastal and flood plains. Isotope analysis further indicated a temporarily restricted lake in the area during the Pleistocene epoch. These environments developed along the coasts just after the lacustrine regressions allowed the setting of favourable conditions for fossil mammal assemblage. That is, this land draws attention to the lives of humans and animals due to the existence of fresh water in the rift valley, the savannah and wooded environment.

The strategic location of the Buia basin in the Rift Valley has great significance in understanding mammalian diversification, turnover, dispersal and extinction. It is known that the wide range of the Buia basin was inhabited with diversified fauna and hominins in the late Early Pleistocene. This basin was home to different archaic humans and now-extinct animals around one million years ago. Alongside the archaic Buia Homo, a diverse and large number of animals simultaneously inhabited the area. These animals (see Fig. 2) were totally different from today’s animals. Throughout the evolutionary process, various animals became extinct, while others were replaced by their modern descendants. To date, fossil evidence of three different species of pigs, hippopotamus, elephants, horses, gazelle, rhino, giraffe and a unique species of an extinct genus of African wild cattle, have been discovered in the Eritrean Danakil Depression. Apart from these species, indirect evidence of large hyenas in the Basin also exists.
A million years back... in the Danakil Depression of Eritrea

Based on current knowledge, palaeoanthropologists group early hominins (see Fig. 3) as follows: (1) Mio-Pliocene early hominins (Sahelanthropus, Orrorin, Ardipithecus) (2) Plio-Pleistocene “gracile” australopiths (Australopithecus); (3) “robust” australopiths (Paranthropus) and (4) the earliest members of our own genus, Homo. The evidence of the earliest known hominins (a primate of a family [Hominidae] which includes humans and their fossil ancestors) came from Chad (Sahelanthropus, Orrorin) and dates to approximately 7 million years ago. In East Africa, Ardipithecus ramidus lived about 4.4 Ma. The evidence of early hominins from the deposits of eastern and southern African sites is acknowledged by the “gracile” australopiths and “robust” australopiths respectively. The earliest Australopithecus (a fossil bipedal primate with both apelike and human characteristics) are dated about 4.2 Ma; and shortly before and after 2.5 Ma Paranthropus (a genus name often applied to robust fossil hominins first found in South Africa in 1938) and the initial known appearance of Homo respectively; presumably from Australopithecus or Australopithecus-like ancestors. It is generally accepted that Homo evolved in east Africa between 2.5 and 2.0 million years ago. The early part of the human genus is represented by three species: Homo habilis, Homo rudolfensis, and Homo erectus. Homo habilis (2.4 million to 1.4 million years ago), also known as the “handy man,” is believed to be the first Homo responsible for the Oldowan stone tool technology. Homo habilis had a slightly larger braincase and smaller face and teeth than Australopithecus or older hominin species. However, some ape-like features are retained, including long arms and a moderately-prognathic (projected) face. Early African Homo erectus (1.89 million and 143,000 years ago) fossils (sometimes called Homo ergaster) are the oldest known early humans to have possessed modern human-like body proportions, with relatively elongated legs and shorter arms compared to the size of the torso. The appearance of Homo erectus in the fossil record is often associated with the earliest handaxes, the first major innovation in stone tool technology.

Within this broad evolutionary scenario of our ancestry the genus Homo from Buia (see Fig. 4) filled the gap between Homo erectus (1.4 million years) and Homo heidelbergensis (0.65 million years). This nearly complete fossil skull from Buia was found in the Aalad Area, between the villages of Buia and Maebel region within the Northern Red Sea zone, in 1995. The discovery of this complete skull was a scientific breakthrough. To date, evidence of a complete skull of Homo dating to between 1.4-0.65 million years is scarce, in Africa or elsewhere in the world. This well-known complete fossil skull from Buia was recently complemented by more fragments of Homo fossils from the nearby site of Mulhuli-Amo, about 4.7 km south of the Buia site.

The human species from the localities of Buia and Mulhuli-Amo are characterized by distinctive and significant types of morphological characteristics. The low cranial height and the shape of the cranial profile are similar to the characteristic of the archaic African Homo erectus (Homo ergaster) and the marked expansion of the parietal bones and the vertically expanded face features fit the modern Homo sapiens. This blend of anatomic characteristics reveals the
significance of this human species as a “missing-link” in evolutionary research. The human species acquired the necessary anatomic changes as a response to various influences, such as the cyclical climatic fluctuations that occurred during the late Pleistocene. The global climate cycle marked by an environmental shift resulted in species turnover around one million years ago. This turnover resulted in extinction, migration and/or adaptation of species. Some species developed rapid anatomic changes to adapt to harsh climatic change. Similarly, the human species, reflecting their brain capacity and efficient anatomy, resisted climatic changes when they occurred. During this period they had already developed advanced technological tools that enabled them to exploit new food resources (mainly large animals).

By about 1.0 Ma the Buia human species had already pioneered highly complex technology. The density and variability of the stone tool industry from Buia is solid evidence. These lithic tools were employed to exploit high protein budget from mammal bone and marrow, consequently resulting in a rapid increase in brain size and a change in the intestine gut and anatomy. The brain capacity of the Buia Homo is estimated at 750 to 800cm³. This capacity of intelligence enabled them to produce important technological innovations which resulted in a better diet and more energy. The Buia Homo had already mastered walking in an upright position (bipedalism), enabling them to see enemies in remote areas, and to spend less energy while walking longer distances (unlike quadruped mammals). Generally, the Buia Homo was already a biped, large-brained, efficient stone tool-maker and meat-eater; characteristics that allow geographical movement and survival.

Approximately 200,000 years ago, Homo ergaster was replaced by Homo sapiens in this region. Homo sapiens are therefore the species of present day humanity. During a time of dramatic climate change 200,000 years ago, Homo sapiens evolved in Africa. Like other early humans that were living at this time, they gathered and hunted food, and evolved behaviors that helped them to respond to the challenges of survival in unstable environments. The Red Sea coast of the Buri Peninsula contains the earliest evidence of Homo sapiens in the Red Sea coastal environments, dating to 125,000 years. This technological evidence was later followed by the Middle Stone Age (MSA) and Late Stone Age (LSA) stone tool technologies. Evidence of these
A million years back... in the Danakil Depression of Eritrea

Written by  Tsegai Medin
Monday, 14 September 2015 09:22 - Last Updated Monday, 14 September 2015 09:27

have been already reported from sites on the coast territories of the Red sea at the Gulf of Zula. These include: Abdur, Asfet, Gelealo NW and Misse East. These sites represent the most significant event of human evolution and behavior during the Pleistocene epoch in the region. Around this time modern humans started to exploit marine resources and colonized the territories of the long coastal landscape of the Red Sea. These prehistoric localities are testimony to ancient human settlements, dispersals and cultural interactions within the extended Red Sea Coast and the Arabian Peninsula.