Quaternary International xxx (2017) 1–10

Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

Reconstructing prehistoric settlement models and land use patterns on Mt. Damota/SW Ethiopia

Ralf Vogelsang*, Karl Peter Wendt

Institute of Prehistoric Archaeology, University of Cologne, Bernhardt-Feilchenfeldstr. 11, 50969, Germany

ARTICLE INFO

Article history:
Received 15 January 2017
Received in revised form
19 June 2017
Accepted 28 June 2017
Available online xxx

Keywords:
Ethiopia
Mount damota
Middle stone age (MSA)
Later stone age (LSA)
Settlement pattern

ABSTRACT

Although high-altitude mountain habitats are often regarded as unfavorable for human occupation (e.g. Aldenderfer 2014); on the other hand tropical highlands in Africa are suggested as potential refugia during times of environmental stress (e.g. Basell 2008; Brandt et al. 2012). Archaeological investigations on Mount Damota (2908 m a.s.l.), located on the boundary between the Southwest Ethiopian Highlands to the west and the southern Main Ethiopian Rift valley to the east, yielded a large number of archaeological sites from the Middle Stone Age period until historical times. In this paper we try to reconstruct settlement models for the late Pleistocene and Holocene occupation in this area and speculate about potential land use patterns. Such complex topics demand a landscape archaeological approach that includes open-air sites and rock-shelters. The results from our excavations at Mochena Borago Rock-shelter and evidence from open-air-sites that were recorded during intensive surveys on the slopes and plateau of the mountain, allow a first reconstruction of the settlement history of the area.

1. Study background

1.1. Setting

Although high-altitude mountain habitats are often regarded as unfavorable for human occupation (e.g. Aldenderfer 2014); on the other hand tropical highlands in Africa are suggested as potential refugia during times of environmental stress (e.g. Basell 2008; Brandt et al. 2012). With a maximal altitude of 2908 m a.s.l, Mt. Damota is a perfect case study for the verification of these contradictory conceptions.

The study area is located 320 km south of Addis Ababa, where the southwest Ethiopian highlands intersect the Main Ethiopian Rift Valley near the town of Sodo (Fig. 1). Mt. Damota's steep upper slopes, deep gorges, gentle lower flanks and other physiographic features contribute to variation in vegetation within short distances. As a result, numerous vertical ecozones are compressed within a small geographic area on and around Mt. Damota. Like other regions of the Southwest Ethiopian Highlands (Hildebrand et al., 2010), the area around Mochena Borago is characterized by high biodiversity and an abundant supply of natural and domesticated faunal and floral resources for exploitation by contemporary and past human populations (Lesur et al., 2007; Brandt et al., 2012). This tight variation in altitude – and consequently in rainfall and vegetation – make the study area an excellent setting in which to examine changing human landscape preferences related to elevation.

1.2. Landforms

Mount Damota is a dormant trachytic volcano comprised mainly of Pliocene porphyritic, anorthoclase-phenocryst trachytes and was active from at least 2.94 Ma until the Late Quaternary (Woldegabriel et al., 1990; Chernet, 2011; Corti et al., 2013). Rising steeply from its surrounding flanks (1300–1600 m a.s.l.), Mt Damota's a summit (2908 m a.s.l.; Fig. 2A) offers striking views of the central Main Ethiopian Rift Valley lakes to the distant north, the Bilate River and the southern Main Ethiopian Rift Valley to the east, Lake Abaya to the south, the Gibe and Omo River valleys to the southwest and the Wolayta/Hadiya Highlands to the West.

The topography in the study area is dominated by steep slopes and rocky gorges in the mountain ranges (Abbate et al., 2015) and by lower relief topography in the transitional zone descending to the Rift Valley floor (Fig. 2C).

Due to orographic effects, mean annual rainfall is significantly

* Corresponding author.
E-mail addresses: r.vogelsang@uni-koeln.de (R. Vogelsang), karl-peter-wendt@t-online.de (K.P. Wendt).

http://dx.doi.org/10.1016/j.quaint.2017.06.061
1040-6182/

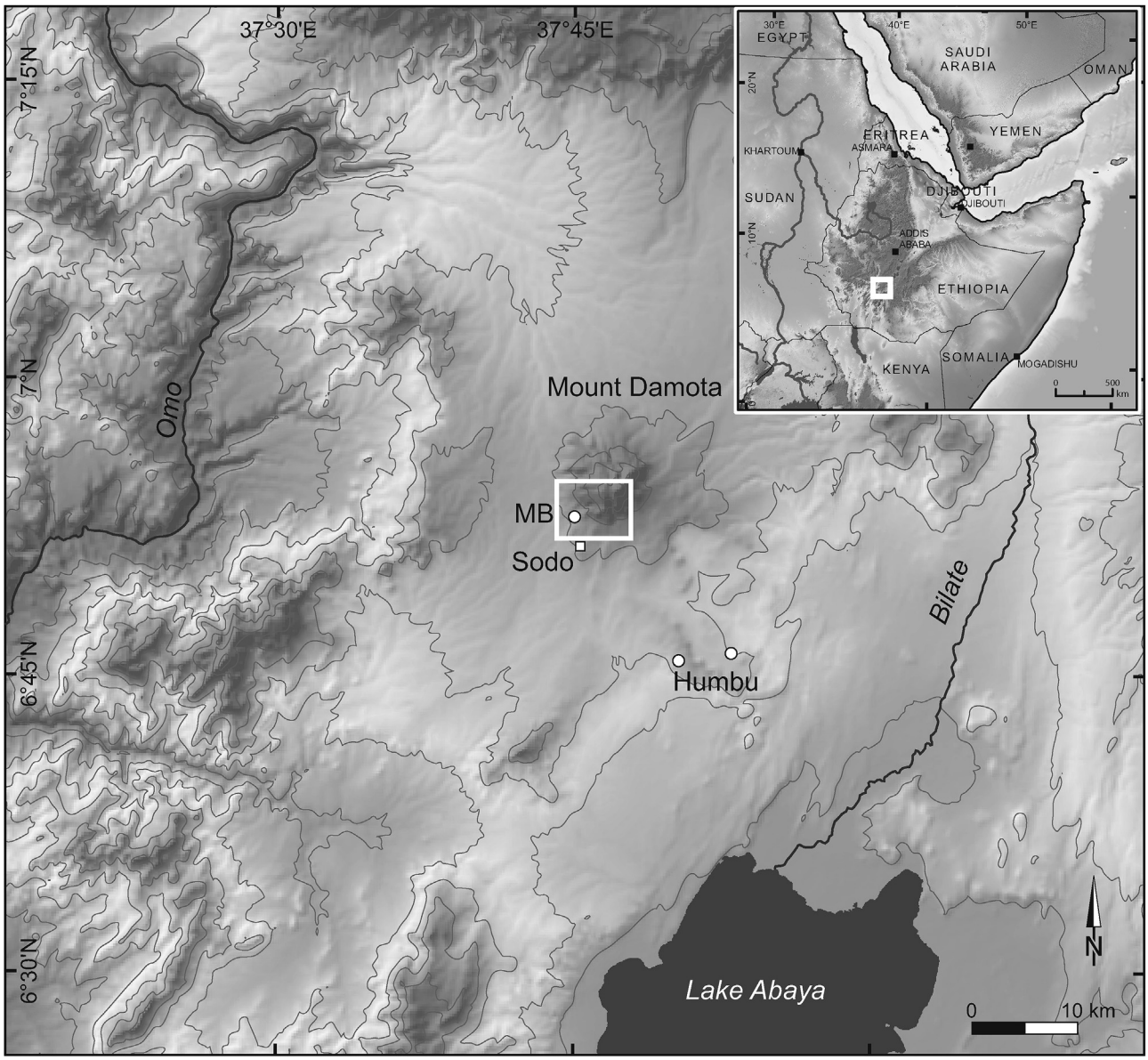

Fig. 1. Location of Mount Damota, Mochena Borago Rockshelter (MB), the two known Humbo area obsidian sources and the survey area (detailed map shown in Fig. 4).

higher on Mt. Damota compared to the surrounding plains and the southern Main Ethiopian Rift Valley. Precipitation amounts to 2000 mm p.a. with half of the annual precipitation falling from June to September (Fisher, 2010; Viste and Sorteberg, 2013).

1.3. Ecological zones

Population pressure, intensive farming and heavy erosion have impacted Mount Damota's natural landscape such that natural vegetation is only found in and near ravines, rocky outcrops, steep slopes and other areas too difficult to settle, plow or hoe. It is therefore difficult to make direct observations of ecological variation.

Three of the major agro-ecological zones recognized by Ethiopian farmers on the basis of altitudinal changes in precipitation, temperature, soils and crop suitability (Hurni, 1998, pp. 18–19) are found on and around Mt. Damota: dega, woyna dega and kola (Fig. 3A–C). Natural floral distributions seem to parallel these traditional agro-ecological zones. At ~2200 m asl, Mochena Borago Rockshelter is within the upper elevations of woyna dega, with bamboo growing nearby (Brandt et al., 2012). Thirty km SE of Mt. Damota, Ethiopia's largest rift lake, Lake Abaya, lies at 1169 m a.s.l. (Fig. 3 D). Ringed by freshwater marshes, Lake Abaya covers more than 1100 km^2 and forms another significant regional biotope (Awulachew, 2006).

2. Archaeological research

This study incorporates data from both open-air surface sites and rockshelters, which provide complementary records of human behavior and settlement patterns. Open-air surface sites are often numerous and can represent many distinct specific activities (e.g. settlement, hunting/butchering, raw material procurement). Rockshelters, while much rarer, carry several advantages. Their sealed contexts, while not assuring undisturbed contexts for finds, have much lower probability of mixed assemblages than surface

Please cite this article in press as: Vogelsang, R., Wendt, K.P., Reconstructing prehistoric settlement models and land use patterns on Mt. Damota/SW Ethiopia, Quaternary International (2017), http://dx.doi.org/10.1016/j.quaint.2017.06.061