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Western Harra Survey Project (2018-2019)

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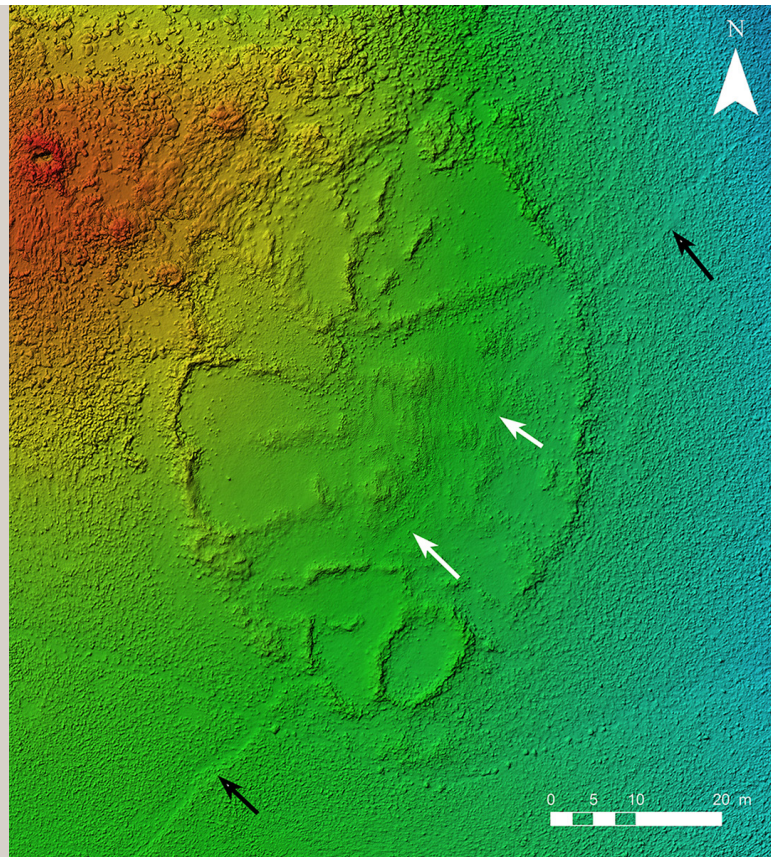
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Fig. 1. Digital elevation model generated from drone photographs of site 1745. Note the path abutting the site at two locations (black arrows) and its newly identified continuation within the structure itself, cutting through pre-existing stone walls (white arrows).



During 2019, the Western Harra Survey conducted two fieldwork seasons, continuing the work of recording and analyzing stone structures on the western edge of the Harra desert between Azraq and Safawi. The first, in April, focused on the aerial recording of sites, specifically a representative selection of “wheels” and “encircled enclosure clusters.” By collaborating with the Royal Film Commission, we were able to import and fly a DJI Phantom IV drone for detailed two- and three-dimensional documentation of sites and their environments. Ten locations were mapped using vertical images for orthomosaics, digital elevation models (DEMs), and 3-D modeling. Following software processing, these data revealed detailed information on the palimpsest of anthropogenic use of several sites. For example, at the “wheel” site 1745, satellite imagery already shows a path coming from a nearby wadi abutting the structure’s northeastern side and emerging along the same trajectory from its southwestern side. The DEM confirms that this is indeed a continuation of the same path and furthermore

Western Harra Survey Project

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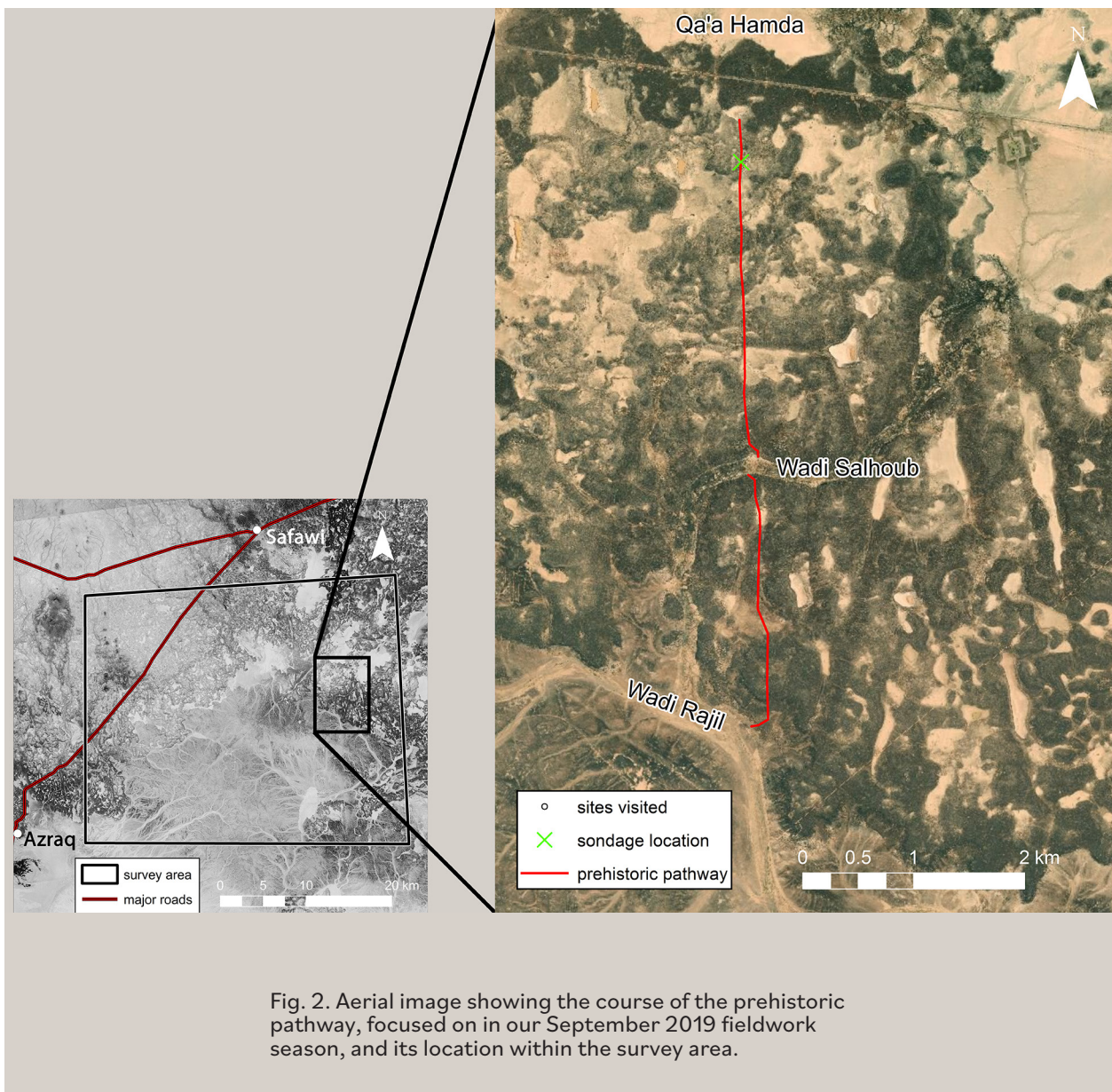


Fig. 2. Aerial image showing the course of the prehistoric pathway, focused on in our September 2019 fieldwork season, and its location within the survey area.

that it cuts across several internal walls without corresponding gaps, indicating that it post-dates the structure (Fig. 1).

We also continued the collection of soil samples for analysis by optically stimulated luminescence (OSL). Specifically, we revisited sites where we had upturned stones from the bottom courses of structures in 2017 in order to access the soil underneath. Taking samples from these stones of precise known exposure time to sunlight (19 months) provided valuable control data for our colleagues at Ghent University's Geology Department to be able to process accurate dating results, expected in the near future.

The second 2019 season was conducted in September, and in addition to continuing the work detailed above it focused on analyses of probable prehistoric pathways formed by the anthropogenic clearing of rocks and the lithic artifact assemblages at several key sites. Specifically, we walked the length of one prominent pathway running almost exactly north-south for around 6 km from Qa'a Hamda to Wadi Rajil (Fig. 2). We measured an average walking speed of 4.33 km/h along a section of this path, whereas walking the same section across the basalt rocks next to it was around 20% slower. This advantage of speed and ease would be even more noticeable when carrying loads. Where this path meets Wadi Rajil, we identified large amounts of raw lithic material not available anywhere near Qa'a Hamda, indicating at least one of the likely purposes for its construction. Furthermore, *awdiya* (wadis) and *qe'an* (flats) provide natural access corridors into the Harra; therefore this path by proxy connects the Azraq Basin with a series of large *qe'an* that reach 13 km east to Dhuweila. Several sites along this path were found to feature faunal rock art, as well as Safaitic inscriptions, indicating a long period of use. We also excavated a small sondage across the path, which showed that its depression and resultant compacted silt was discernible in a trench section.

For the lithics study, we collected 1,236 artifacts from 25 locations, which were preliminarily analyzed in the field. The homogeneous material comprised knapped blades, bladelets, and flakes, and shaped axes, adzes, bifacial points, and knives. The majority were dated to the late/final Pre-Pottery Neolithic or Chalcolithic period. Some sites dated to the Final Pre-Pottery Neolithic B featured abundant "desert burins." At one location in Wadi Salhoub (see Fig. 2), Levallois flakes and points characteristic of the middle Palaeolithic were identified. This period is attested to on the edges of the Harra (Jabal Qurma, Burqu', Azraq Basin), but this discovery significantly pushes back the earliest documented date of occupation deeper in the basalt plain of the Black Desert.