



## Research Note

# The contribution of Ju'hoansi Indigenous Master Trackers to the Cape south coast ichnology project

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Through the Cape south coast ichnology project, based out of the African Centre for Coastal Palaeoscience at Nelson Mandela University, Gqeberha, more than 350 Pleistocene vertebrate tracksites have been identified along a 350-km stretch of coastline (Helm 2023), and 45 peer-reviewed scientific articles have been published, are under review or are in press. One of these was of relevance to a Namibian species, as an extended Pleistocene range was inferred for sand-swimming golden moles like *Eremitalpa granti*, the Namib mole (Lockley et al. 2021a, 2021b). The resulting corpus of knowledge has contributed substantially to the global understanding of Quaternary ichnology (Neto de Carvalho et al., in press a, in press b).

As an ichnological team, we have done our best to do justice to these discoveries, while remaining mindful of the gaps in our communal knowledge base, and consequently of our limitations. In contrast, we recognize that we are at a disadvantage compared with trackers who learned their ichnological skills as part of their earliest life experiences and then never stopped learning, i.e., in whom such an approach was inculcated at a time of brain plasticity. This would seemingly provide a lifelong advantage over relative latecomers such as us. We noted a provocative book title proclaiming that the art of tracking was “the origin of science” (Liebenberg 1990). We concurred with this claim.

We were aware of an increased global interest in indigenous knowledge of palaeontology (e.g., Benoit et al. 2023) and the skill-sets of traditional Indigenous Master Trackers. For example, Ju'hoansi Indigenous Master Trackers from the Nyae Nyae Conservancy in north-eastern Namibia travelled to caves in Europe in 2014 to collaborate with modern-day scientists in the interpretation of hominin tracksites in the Tracking

in Caves project (Biesele 2021; Pastoors et al. 2021; Lenssen-Erz & Pastoors 2021). More recently, Ju'hoansi Indigenous Master Trackers contributed fundamentally to the interpretation of prehistoric tracks in the Namibian rock art record (Lenssen-Erz et al. 2023).

We knew that the Ju'hoansi are among the last of the San in the greater Kalahari to retain the full suite of ancient hunter-gatherer skills: their lands are still largely wild, with free-roaming game; they still engage in subsistence hunting with bow and poisoned arrow, and a few still hunt by persistence running. They gather food from the veld, they speak their original click language, and they still draw on their healing dances. They are expert in the art of tracking, and their ability to follow and interpret animal tracks is extraordinary. We knew that certification as an Indigenous Master Tracker occurs through the accreditation program developed by CyberTracker, and involves peer recognition within the tracker community. We appreciated that a mere handful of indigenous trackers across the Kalahari are currently recognized as Master Trackers (the highest tracker qualification).

We speculated on how Indigenous Master Trackers/hunter-gatherers might view our work. How would their wisdom and expertise, honed through an unbroken knowledge-train extending over at least tens of millennia, mesh with our modern scientific approach? Might unique insights perhaps materialise? From such questions a 2023 project was initiated, in which two Ju'hoansi Indigenous Master Trackers from the Nyae Nyae Conservancy, #oma Daqm and luce N#amce, spent five days with us on the Cape south coast.

In undertaking such a venture, we understood that examining and interpreting our relatively poorly preserved tracksites in aeolianites (cemented dunes) on



the Cape south coast might be more challenging than opining on well-preserved hominin tracks in French caves or on Namibian rock art, and would certainly be different from tracking in the sand and bush of north-eastern Namibia. For example, our best-preserved tracks are often preserved in hyporelief on the undersides of ceilings and overhangs, and a common mode of track preservation occurs in profile in cliff exposures. Moreover, approaches that seem natural to contemporary trackers are not available to us: our track-bearing surfaces on rock are typically small, and there is no opportunity to consider feeding and associated signs or to pick up the spoor some distance away when the tracks are interrupted. We know neither the time of day the tracks were registered, nor the role of dew, and our chances of actually encountering the fossilised trackmaker are close to zero.

On the positive side, the Pleistocene Epoch is not that far removed from the present. Many of the tracks that we encounter in aeolianites on the coastline today were registered by species that are extant, and would therefore be generally familiar to our new research colleagues. The tracks of extinct species which might be encountered (such as the long-horned buffalo and giant Cape zebra) could easily be explained, but nonetheless we knew that a steep learning curve would operate, and that instruction in palaeo-ichnological principles was required.

We then adopted the following method: the first half-day was spent in practical instruction in an area east of Still Bay that contained a concentration of known tracksites with different modes of preservation. We then walked east along the coastline together, pointing out previously-identified tracksites of interest. In such cases we would not provide our own interpretations, thus giving the Indigenous Master Trackers the opportunity to analyse and confer among themselves. This discussion would be followed by a summary of their interpretations, from possible trackmaker identification to evidence of associated behaviour. We would then share our own insights and, where applicable, our photogrammetry data. In general, we would then achieve consensus. Before long, #oma Daqm and /uce N#amce were providing persuasive interpretations for sites we had considered enigmatic, and had begun identifying freshly exposed fossil tracksites for themselves (Figure 1). A similar approach was adhered to during the days that followed.



Figure 1: #oma Daqm and /uce N#amce beside a vertebrate tracksite they identified on a loose aeolianite slab (reproduced with permission of Richard Webb)

A brief summary of breakthroughs resulting from the novel contribution of our San collaborators includes: corroboration of our provisional interpretation of a brown hyena trackway, an evidence-based interpretation that a hitherto confounding trackway had probably been made by a pangolin (the first, as far as we are aware, in the global palaeoichnology record), identifying ostrich tracks which we had previously failed to discern (but were easy to see under guidance), and detecting the track signature of the scrub hare. We also visited known hominin tracksites together (more than 86,000 years old), and were acutely aware that the trackmakers were in all probability the direct forebears of #oma Daqm and /uce N#amce. They were visibly moved by the experience, as are we every time we enter the coastal caves that harbour these footprints on their ceilings (Figure 2).

The visit had been intended as a test of concept, and we now had 'proof of concept'. At the end of our time together, we felt a sense of privilege at having been able to enjoy this remarkable ichnological opportunity. From our newly acquired perspective, combining ancient traditional scientific knowledge and modern scientific approaches leads to rich, compelling results and conclusions. As a result, several new scientific papers will be submitted to academic journals. We are agreed that the submitted list of co-authors will include #oma Daqm and /uce N#amce, with the Jul'hoansi Trackers Association as their affiliation. We believe that there are several ways in which scientific qualifications can be measured. Academia typically looks at university degrees and institutional affiliations. However, another way lies in the ability to use the traditional experiential (to wit, scientific) method, taught from childhood, to support and feed one's family and community through tracking, hunting, and gathering.

The experience of 2023 is seen as but a starting point for a more comprehensive initiative. Collaborative surveys of the Cape west coast and Cape east coast form a possibility, in which #oma Daqm and /uce N#amce could be joined by other Indigenous Master Trackers from Nyae Nyae. One hope is that such measures may help promote and preserve the skills and wisdom of traditional ichnological knowledge. We believe that if we succeed in this quest, ichnology the world over will benefit.



Figure 2: #oma Daqm and /uce N#amce after emerging from a cave containing Pleistocene hominin footprints at Brenton-on-Sea

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