A Prehistoric Diver on the Atlantic Coast of South Africa

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One of the exciting pathologies to be noted in a 2300 year old skeleton from St Helena Bay on the Vredenburg Peninsula (Figure 1) along the Atlantic Coast of South Africa was that he had ‘surfer’s ear’, a condition resulting from constant immersion in cold water [1]. In addition, the genomic history of this 50-year old man has shown that he came from a population that no longer exists on the Cape West Coast.

In April 2010 a human skeleton was disturbed during excavation of a ditch to lay a pipeline along the coast at St Helena Bay (Figure 2), a small township on the coast some 135 km. north of Cape Town. Under a permit (2010/07/003) from Heritage Western Cape, excavation of the skeleton was duly carried out [2].

Prior to excavation the grave shaft in a shell midden could be seen, due to slight differences in soil colour. Excavation of the grave showed that the skeleton was lying in fully flexed position on its right side upon a consolidated dune surface. After exposure (Figure 3), the skeleton was removed and samples taken for radiocarbon dating and DNA analysis.

The skeleton was given to the Department of Human Biology at the University of Cape Town where it was studied by Prof. Alan Morris. The skeleton was complete, and proved to be of a 1.5m tall male of age greater than 50 years at time of death. Pathologies included osteoarthritis on one ankle and shoulders, and the bony growth in the ear, known colloquially as ‘surfer’s ear’.

Dating

Samples of the rib cage from the skeleton and shells from the midden were sent to the University of Georgia Centre for Applied Isotope Studies for radiocarbon dating. The skeleton dated to 2330±25 years (UGAMS 7255), while the midden deposit dated to 2930±25 years (UGAMS 7256). The significance of the dates is that the burial took place in an already established midden (thus the older date). The date of the skeleton pre-dates the arrival of domestic animals into the Cape by incoming herders who also exploited marine resources [3].

Genomic analysis

The importance of the dates before the arrival of herders into the Cape some 2000 years ago means we can be certain that this individual was an aboriginal coastal forager.

mtDNA analysis of a tooth extracted from the skeleton showed it to have a signature of LOd2c [1]. Placing this information in context, no other material along the coast from modern populations exhibits such a signature. The nearest groups showing this are Nama from Northern Namibia, and there is a huge time gap between the two samples sequenced. Modern populations, such as Kalahari Ju/Hoan and XunBushmen from Northern Namibia carry a LOd/LOk lineage. LOk is missing...
south of the Orange River in South Africa. In the Western Cape, ‘coloured’ (mixed race) populations present LOD genomes [4]. This suggests that Southern African west coast may well have been previously occupied by a population presenting the LOD2c signature.

DISCUSSION

The incidence of ‘surfer’s ear’ in this individual suggests he spent considerable time submerged in the cold Benguela current of the Atlantic Coast of the Western Cape. This biome is extremely rich [5], and may be accentuated in St Helena Bay where studies showing concentrations of juvenile pelagic fish, such as anchovy and pilchards, who mature there before returning to the Agulhas Bank for spawning [6]. In addition, deep water fish eggs and larvae of hake drift inshore in this area [7]. In addition, whales and dolphins are common around the coast today, and at Slipperbaai in St Helena Bay there have been a series of live-strandings of False Killer shales (Pseudorca crassidens) as well as dolphins in the past 75 years [8,9]. All of these resources would have made an extremely attractive environment for coastal foragers. Our 50-year old ‘diver’ would probably have been focussed on shellfish, crayfish (Jasus lalandii), and possibly octopus. It was previously assumed that the large Turbo and Haliotis shellfish, whose shells are found in shell middens, would have been picked up only at spring low tides, since there is no historical evidence of indigenous people using water craft. This individual hints that he was actively diving into the sea to get these resources.

His mtDNA signature is equally exciting. Since he predates the arrival of Khoe-speaking herders to the Cape we now have a standard to compare the effects of the arrival of newcomers into the area. There is considerable debate about the consequences...
of this event revolving around whether the aboriginal hunters of the Cape took on herding by access to domestic sheep through internal exchange systems [10,11], or whether there were incoming Khoe-speakers originating in East Africa who arrived bringing their sheep with them [12]. The genetic signature will be a key to resolving the arguments.

REFERENCES


