

Chapter 2 : Early humans and changing landscapes in the Knysna region of the southern Cape

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2.1 Introduction

Knysna has attracted people for several hundreds of thousands of, and possibly more than a million years. The biodiverse habitat of the lagoon and associated river system, which sometimes flowed out onto a broad plain beyond the current coastline, had a wide variety of useful resources and must have been a focal point for all of these millennia. Hunter-gatherers would have found a stable and varied source of food staples in this rich environment. Early modern humans and their ancestors left evidence of their lives across this landscape in stone artefacts, the remains of the animals they hunted, the shellfish and fish they consumed, the hearths in which they cooked, and even in the traces of artistic endeavor they left behind. In this chapter, we summarize what is known about these lives and the world in which they lived – a world at times so different from the modern landscape, that a contemporary resident of Knysna might have difficulty recognizing it.

Dramatic sea level changes during the Pleistocene (2.6 million to 11 700 years ago) had a profound impact on the topography, environment, and

societies of the southern African coast. A shallow, nearly flat continental shelf stretches out 75 km south of the current coastline at Knysna (Figure 2.1). For much of the last 2.6 million years, this shelf was an exposed grassy plain with broad, meandering rivers that flowed south and, in some places, created wide marshy deltas and estuaries where they met the ocean^{1,2}. This is now referred to as the Palaeo-Agulhas Plain³.

When glaciers expanded to the greatest extent in high latitudes, and sea level was at its lowest, the exposed plain added an area roughly the size of Ireland to the southern African landscape. In other times, the collapse of global ice sheets and warming temperatures raised oceans far above modern sea level. These high sea stands not only inundated Knysna but cut into the sandstone cliffs that now overlook the ocean, creating a series of caves up to about 25 m above modern sea level⁴⁻⁶. After the waters receded, these caves sheltered people as they hunted on the expanding plain or collected shellfish along the changing coastline all along the southern coast, including in the area around Knysna.

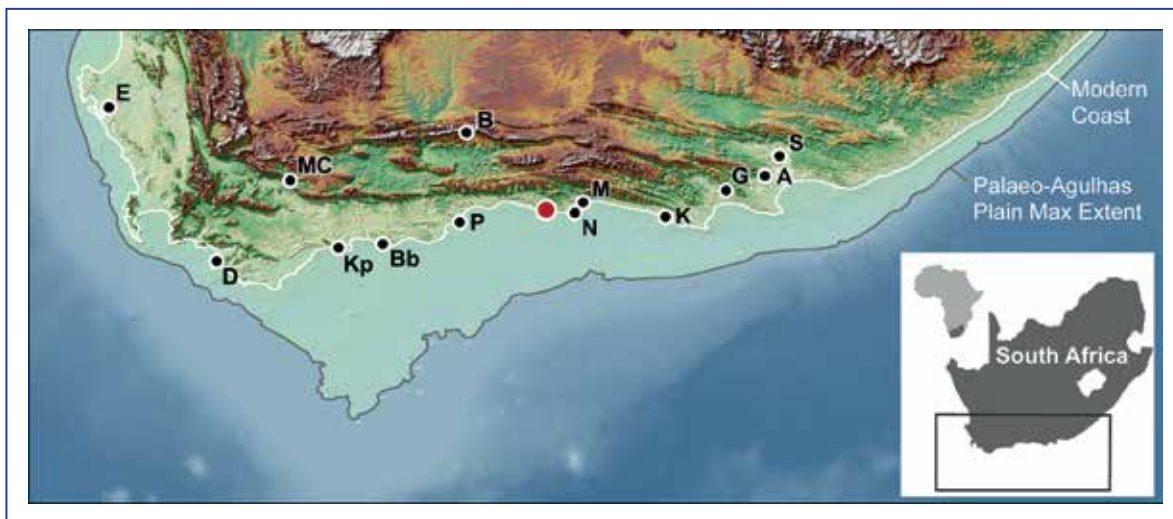


Figure 2.1 Map showing the current southern coastline (white line), the Palaeo-Agulhas Plain at maximum extent (bounded by grey line), and sites discussed in the text. Red dot – Knysna. Site labels: A- Amanzi Springs; Bb – Blombos Cave; B – Boomplaas; D – Die Kelders; E – Elandsfontein; G – Geelhoutboom; K – Klasies River Main Site; Kp – Klipdrift Shelter; M – Matjes River Site; MC – Montagu Cave; N – Nelson Bay Cave; P – Pinnacle Point; S – Sundays River Sites (map created by P. Fahey).

2.2 The Earlier Stone Age: human ancestors at Knysna

The earliest evidence of ancient people in the Knysna area is found across the surrounding coastal plateau — particularly in higher areas surrounding the Knysna Lagoon (as at the top of the Western Heads — see Figure 2.2) and along the top of the coastal escarpment. Large, oval or tear-drop shaped stone tools, colloquially known as “hand-axes” (Figure 2.3), are often found in the sandy sediments of these uplands — particularly appearing during road and construction projects. In some places, there are large concentrations of these tools — many of which appear unbroken. Why people would abandon large numbers of useful tools is one of the intriguing mysteries of the Earlier Stone Age (dating from 3.3 million years ago to about 300 000 years ago). Hand-axes are the signature pieces of the Acheulean technocomplex, part of the Earlier Stone Age, and were shaped through careful planning and the strategic removal of thinning flakes from both faces of a large cutting tool (a.k.a. biface). Analyses show that these were multi-purpose tools, used for butchery, wood working, and other activities^{7,8}. They frequently occur

with other bifacial tools such as picks and cleavers that have not been as carefully shaped. At Knysna, bifaces were often made on locally-obtained quartzite, using both the cobbles commonly found near beaches as well as outcrops of this stone. This material is often banded with multiple colors of stone, and some are strikingly beautiful. It is possible these objects are some of the longest surviving pieces of portable art, although they undoubtedly were an essential tool as well.

The people who made these tools included those we now classify as *Homo ergaster* or *Homo erectus*, and after about 1 million years ago, an archaic form of our genus continued making bifaces. These ancestors or early people are sometimes classified as *Homo rhodesiensis* or *Homo heidelbergensis* and they preceded *Homo sapiens*. Although we have very few preserved fossil bones from these people, we can make some general statements about their anatomy. They were within the height and body size of modern humans, but with somewhat smaller brain size, low foreheads, heavier brows, and larger facial features. The technological advancements of the Earlier Stone Age, including both the relatively



Figure 2.2 View of the Knysna Heads (Western Head on left), with the straits connecting the Indian Ocean (foreground) to the Knysna Lagoon. The modern coastal platform (approximately level with the top of the headlands), is visible along the base of the Outeniqua Mountains.

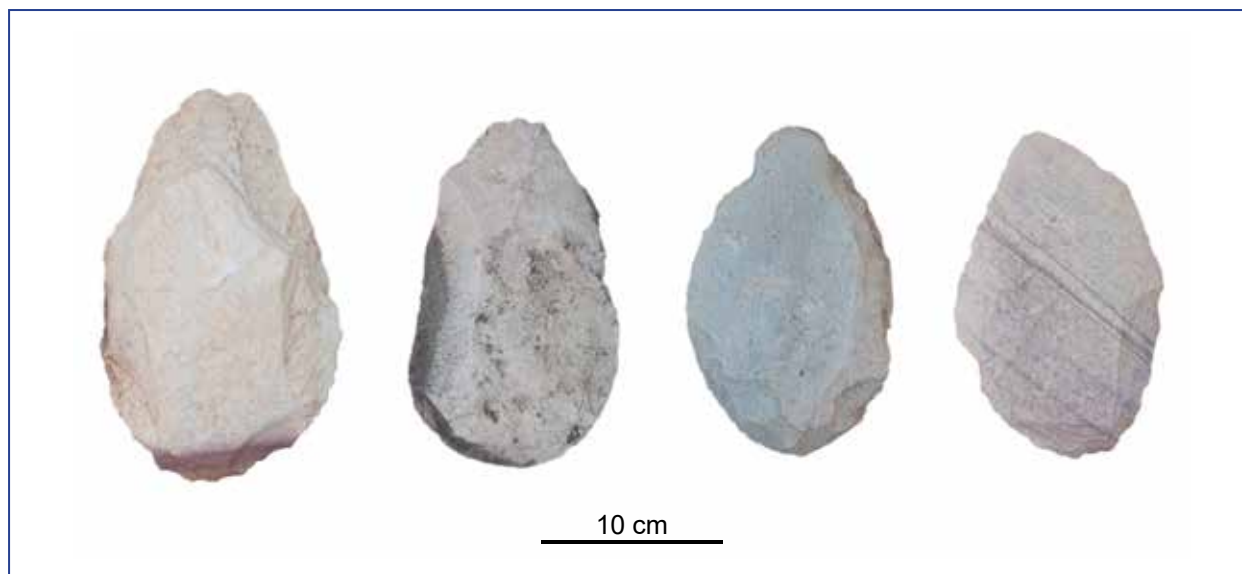


Figure 2.3 Hand-axes recorded during survey of the Western Heads in 2018 (Photograph: © J.K. Murray).

standardized tool forms and the controlled use of fire (after 1 million years ago) suggest that these people had more complex social interactions than earlier groups and may have organized themselves more like humans do today — possibly sharing food and knowledge, and perhaps using a protolanguage around a fire while developing strong social bonds. These people included the ancestors of modern humans.

Open-air Acheulean sites, like the one shown in Figure 2.4, near the ridge top of the Knysna Western Heads, are not unusual along the southern coast. Open-air sites are defined as those that do not occur within the hard shelter of a cave or rock shelter. They are an important but often under-studied part of the Stone Age archaeological record. While caves tend to “trap” and preserve sites, open-air localities are more often ephemeral (briefly used) in nature, poorly preserved (due to exposure), challenging to locate (when obscured by vegetation), and difficult to date (if they are found only at the surface). The identification of a dense concentration of hand-axes in a small area, as at the top of the Western Head, is therefore a potentially useful addition to the Earlier Stone Age record. In 2018, much of the vegetation covering the Western Head was still recovering from the devastating 2017 fires. This exposed an Earlier Stone Age site with a density of more than 100 artifacts per 200 square metres. Comparisons with similar stone tool industries throughout southern Africa and beyond suggest these are at least older than 250 000 years

and could be as old as 1.3 million years ago. Future study of the site may tell us more about the landscape and lives of these very early Knysna residents.

A sea level rise of nearly 25 m at 1.1 million and about 11 m at 420 000 years ago^{4,6}, would have dramatically changed the Knysna Amphitheatre (the area surrounding the lagoon — see Figure 2.5), and the distribution of archaeological sites. This would have also altered the character of the lagoon with changing salinity, tides, and animal life in ways that are of interest in the context of modern climate change¹⁰. Without better dates on the Earlier Stone Age sites, we cannot know how these ultra-high sea stands affected local people. However, we can be fairly certain that evidence of the Acheulean (Earlier Stone Age) predating 420 000 years ago in the lower areas of the Amphitheatre and at the coast was either altered or removed through this process of inundation.

Documented Earlier Stone Age sites along the southern coast (all of which are within the Eastern Cape) include Amanzi Springs, Geelhoutboom situated within a paleodune close to the Klasies River Main Site, and sites within the alluvial gravels of the Sundays River, including Penhill Farm, Atmar Farm, and Bernol Farm (see Figure 2.1)¹¹. To the west of Knysna, the Earlier Stone Age has been studied at the inland site, Montagu Cave, and at Elandsfontein, on the west coast. The sites at Knysna, if preserved in context, could add much to our understanding of the climate, ecology, environment, and behavior of these early residents of the south coast.



Figure 2.4 A 2018 Archaeological survey of an Earlier Stone Age site at the Featherbed Reserve, Western Heads, near Knysna (elevation ~189 m asl).



Figure 2.5 View to the southeast of the Knysna Lagoon and Amphitheatre, with the Indian Ocean in the background (Photograph: © Domossa).

2.3 The Middle Stone Age and the Emergence of Modern Humans

From about 300 000 to 250 000 years ago people across Africa, and along the southern coast, began to develop new ways of producing stone tools in a shift to what researchers recognize as the Middle Stone Age. For the first time people began to make tools that connected stone to wood handles to produce more effective knives and spears. In the Middle Stone Age, knappers often made stone tools such as flakes, blades, and points through the process of “core preparation”. This was a highly strategic approach of knocking flakes from a larger block of stone (the core) with a hammerstone (a harder rounded rock) in a sequence that allowed the knapper to eventually strike off a tool with a specific shape (like the example from Knysna in Figure 2.6). Through this technique, a stone tool knapper could control not only the resulting outline (note the symmetry and length of the tool in Figure 2.6), but also the thickness of the tool across its base (an important factor preventing breakage when used). Edge damage and notches on the sides and tips of these flakes, blades, and points provide clues to hafting arrangements, and the use of these objects

as cutting implements and projectile weapons (note the damage to the tip of the stone tool in Figure 2.6). Scrapers used to scrape hides and other materials formed part of the toolkit as well, alluding to the varieties of roles that lithics (stone tools) played in the survival of ancient coast dwellers from this area.

Gradual changes in human anatomy throughout the period leading up to the Middle Stone Age included shifts to less robust skeletons, a more modern looking face and head, and the expansion of average brain size and shape. At some point in this period, all modern humans shared a common ancestor, and paleoanthropologists recognize these people as *Homo sapiens*. Thus, we refer to the people of this time as Early Modern Humans (or EMH). Few fossil EMH representatives of this time exist in Africa and the largest concentrations of these (dating to about 315 000 years ago) are found along the coast of North Africa¹². There are very few modern human fossils from South Africa (and from sub-Saharan Africa in general) that pre-date the Holocene¹³.

The southern coast of South Africa contains some of the most important sites documenting the emergence of EMH technologies and capabilities that we particularly associate with the unique human adaptation. This includes the adoption of



Figure 2.6 A typical Middle Stone Age point from Knysna.

coastal shellfish resources as a regular part of the diet, with the earliest evidence from Pinnacle Point, near Mossel Bay¹⁴, and other notable sites such as Klasies River Main Site, Die Kelders, Klipdrift Shelter, and Blombos Cave (Figure 2.1). On the southern coast, brown mussel (*Perna perna*) and alikreukel (*Turbo sarmaticus*) were among the most popular species eaten, but other types of shellfish such as multiple species of limpets, sand clams (*Donax ser-ra*), and giant chiton (*Dinoplax gigas*) also formed an important part of the coastal diet¹⁵.

Over time, people became increasingly adept at getting to deeper parts of the tide zone. In fact, the earliest adoption of a coastal foraging strategy along the southern coast of South Africa shows that people were able to keep track of complex calendar information¹⁴. Staying close to the coast for enough time to understand these tidal rhythms suggests these foragers had more limited terrestrial hunting ranges. However, shellfish, in conjunction with the diverse edible plant and animal resources of the estuary (see Appendices 1 and 2), would have provided a stable food base as well as nutrients particularly important to growth and brain development in human infants and children. This would have likely contributed to reproductive success and some population growth. Living the coastal life may have also been key to the early development of complex social strategies in humans — such as the cooperative defense of territorial resources¹⁶. At Knysna, we find the remains of shellfish feasts left by Middle Stone Age humans.

These early humans also began to explore ways to improve stone tool quality through heat treatment¹⁷, which may have played a role in the earliest production of much smaller stone tools by 71 000 years ago (at Pinnacle Point), for the first time within the range of potential projectile weaponry¹⁸. The geometric backed tools from the Howiesons Poort technocomplex, about 65 000 years ago, were sometimes used in what is considered the earliest bow and arrow technology¹⁹. Evidence for some of the earliest personal decoration and production of symbolic and artistic work also appears along this coast — notably early at Blombos Cave near Stillbay^{20,21}.

2.4 Knysna and environs during the Late Pleistocene

Since the emergence of this new, more modern anatomy and innovative Middle Stone Age technologies, dramatic shifts in global climate changed the Knysna landscape from a coastal lagoon to an inland river valley several times. These drastic

changes in the size of hunting territories, the proximity of shellfish resources, and the periodic disappearance of whole ecosystems, may have happened relatively quickly. Fisher and colleagues²² used global sea level estimates together with local geomorphology and isotopic data to estimate the position of the southern coast and the speed of change through this period. They estimate that when sea level rose, the coastline moved north at an average speed of 2 to 4 km per century. Given the importance of cultural knowledge to success in human subsistence strategies, this change may have caused disruption and stress among near-coastal peoples for millennia.

For long periods, peaking at about 160 000, 71 000, and 21 000 years ago, the coast was far to the south (between 40 and 75 km away south of Knysna)²². When the coast was far away, Knysna's residents lived near a river that ran through the rocky headlands and meandered south as a single sinuous channel across a grassland rich in herd animals^{2,23}. In character, this waterway would have more closely resembled the wide, slow rivers of West Africa, without the gorges and deep valleys of the modern southern coastal plain¹. The Knysna Heads and the river channel or straits between them were a constant feature of this landscape throughout this time²⁴.

At Knysna, evidence for the Middle Stone Age is preserved at multiple cave sites near The Heads. From the high south-facing caves, people would have looked out onto a savannah with diverse large animals, including giant long-horned buffalo (*Syncerus antiquus*), giant Cape zebra (*Equus capensis*), giant hartebeest (*Megalotragus priscus*), elephant, hippopotamus, and even giraffe^{23,25}. By living close to The Heads, these people would also have access to an important freshwater source — the river. Some sites face into the Knysna Straits and would have had a more limited view of the Palaeo-Agulhas Plain and the lagoon area. These sites suggest that this short corridor linking these two ecosystems (the modern Knysna Basin and the Palaeo-Agulhas Plain) was possibly itself an important point of interest.

Periodically, sea levels rose, inundating the Palaeo-Agulhas Plain completely and bringing coastal resources back to within the daily foraging range of Knysna's residents. About 125 000 years ago, sea levels rose to about 6 to 8.5 metres above today's level²⁶, flooding the lagoon and likely washing away many earlier archaeological sites along the southern coast, before retreating slightly. For nearly 50 000 years during this high stand, the shore was not too far from its current position.

Beginning about 74 000 years ago, the coast began a long slow retreat south as the world entered a glacial period. The clear evidence for where people were spending time along the southern coast between 74 000 and 50 000 years ago varies widely. Despite rich records of occupation elsewhere (notably at Pinnacle Point and Klasies River Main Site), it seems that small, highly mobile groups stopped by the Knysna Heads only occasionally and spent little time at high sites overlooking the plain. It is possible we have not yet identified the key Knysna occupation sites for this time period.

At about 34 000 years ago, the Knysna environment and archaeological record changed dramatically. In our excavations at a south-facing site now overlooking the ocean—Knysna Eastern Heads Cave 1 (KEH 1)—we find a change from very little evidence of human presence to intensive occupation dating to about this time (Figure 2.7). Unlike previous people, these new inhabitants had close

access to rocky intertidal shellfish, which they frequently brought home for meals (Figure 2.8). Their stone tools, similar to other Middle Stone Age industries, included long triangular points, possibly used as knives and spear points. We find these together with dense accumulations of mussel, turbo (alikeukel), limpet, and giant chiton, among other shellfish. Our findings suggest a rise in sea level that brought the coast within 10 km, perhaps even closer, to the Knysna Heads. This would have meant a loss of large mammal habitat (an important resource for EMH), but these early humans were flexible, and at Knysna we see the continuation of the coastal foraging strategies evident at earlier sites.

This brief rise in sea level at approximately 34 000 years ago, probably lasting less than 5 000 years, is as yet only documented in the KEH 1 archaeological record and may have been so short in duration that it left no other geomorphological evidence along the coast²⁷. In fact, there are few other



Figure 2.7 KEH Cave 1 (near Knysna) during excavation.

archaeological sites dating to the period between 40 000 and 21 000 years ago in the Western Cape, and none along the coast, making KEH 1 a unique and significant record. The closest contemporaneous site — at Boomplaas near Oudtshoorn — is about 125 km inland, in a more arid environment, and seems to have had a more intermittent occupation at this time²⁸. By contrast, our research at Knysna shows a dense record of human occupation between 34 000 and 20 000 years ago. This supports

the hypothesis, suggested by earlier researchers²⁹, that larger numbers of people lived out on the Palaeo-Agulhas Plain prior to and during the Earth's most recent ice age.

2.5 The Sea Retreats

From 29 000 years ago, global ice sheets began to grow, sea levels slowly dropped, and the grassy Palaeo-Agulhas Plain began to open up to its grazers.



Figure 2.8 A Middle Stone Age tool found in place at KEH Cave 1 (Knysna) next to a cluster of shellfish. The sediment is dark as a result of dense charcoal and decayed organic matter. This feature is found in a layer dating between 34 000 and 29 000 years ago.

During the early part of the glacial (i.e., through about 23 000 years ago), with coastal resources still possibly still less than 40 km away, abundant ungulate herds nearby, and a stable freshwater source (the Knysna River), Knysna may have been the ideal place for human foragers. Although shellfish gathering at KEH 1 diminished, the human presence grew.

At KEH 1 during this time, we find evidence that humans repeatedly visited the site, leaving dense accumulations of stone tools, remains of meals, decorative materials, and constructed hearths. About fifty combustion features (Figure 2.9) were record-

ed in a relatively small area — 3.5×1.5 m by about 0.5 m deep. Analysis shows many of these features are well-preserved, and several were constructed directly on top of older hearths³⁰. These ancient campfires were found in association with the densest accumulation of archaeological materials from the Pleistocene levels of the site. Here, we find abundant evidence of stone tool production, the consumption of a wide variety of game — including large ungulates — and other activities. Ostrich eggs were brought to the site, possibly for cooking or as water flasks (Figure 2.10). Although now associated with the more arid regions north of the

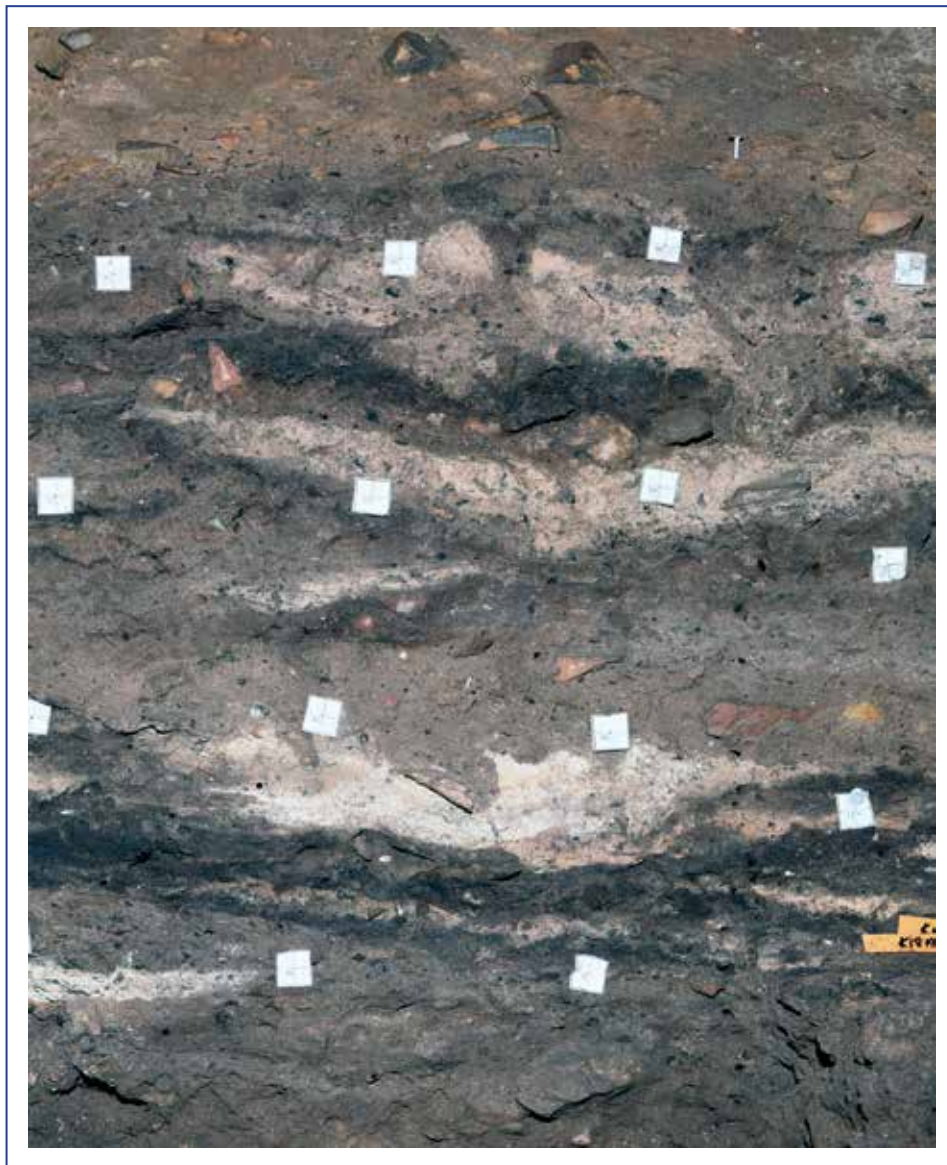


Figure 2.9 Stratigraphic section through combustion features (hearths) at KEH Cave 1. White squares are 2 cm wide. White ash layers overlie dark charcoal layers. These features are found in a layer dating between 26 000 and 22 000 years ago.

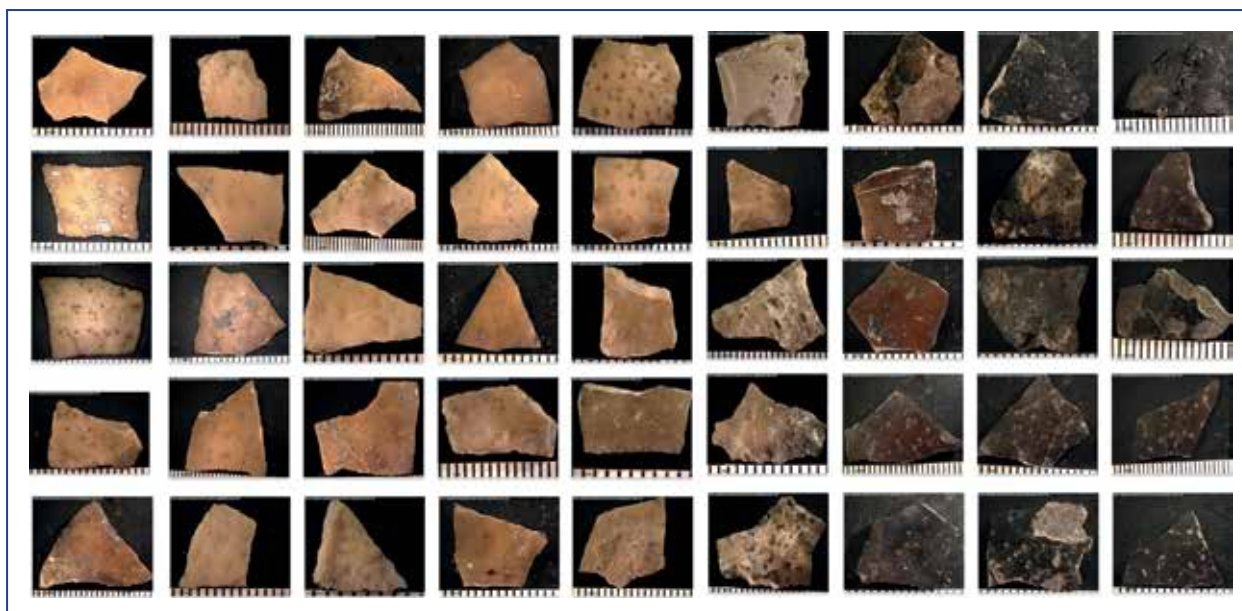


Figure 2.10 Ostrich eggshell fragments from KEH 1 showing color variation related to heating (from Sender et al.³¹).

Outeniqua Mountains, the Palaeo-Agulhas Plain likely supported ostrich to the south of Knysna. We find numerous fragments of these eggshells in campfires³¹ and in one case, the deep impression of an egg preserved as a mould in the ashes of a hearth — perhaps set there as it was cooked.

We also find evidence of artistic pursuits. Throughout this period, minerals typically used as pigments — including ochre in a variety of forms — were common. These pigments include iron-rich shale, ferricrete, and hematite, all of which are available in the Knysna area³², and range from dark red fragments of “crayons” to orange-red and bright yellow powders (Figure 2.11). A slab of stone (~15 cm across) was used to grind red powder. Whether these pigments were used to color objects or people is unclear, although we have yet to identify much of the former at KEH 1. The variety of colors and abundance of materials nevertheless suggest a well-developed interest in the use of color in everyday life.

A preliminary analysis³⁰ of the stone tools made and used at Knysna from this time shows they are smaller than the earlier forms and increasingly made on different types of raw materials, particularly quartz — a very difficult stone to flake well, but one which is quite durable. These shifts in stone tool technology may be linked to a more widespread move away from the core preparation strategies of the Middle Stone Age, toward the smaller tools of the Later Stone Age. This transition is historically

poorly documented across Africa^{29,33}, but at KEH 1 we find it associated with dense archaeological accumulations before and after the change. This density of material at the Middle to Later Stone Age transition is unique within the Western Cape and KEH 1 is the only site to capture the transition at the coast. The relatively rapid transition from coastal foragers using Middle Stone Age tools to this new technology raises intriguing questions. Was this cultural change within a population adapting to a changing landscape, or did a new group of people move in to claim this optimal location overlooking the plain?

By 18 000 years ago, the world had reached the peak of the last glacial (the Last Glacial Maximum or LGM). Knysna was drier than today and located far inland. At KEH 1, the people who visited the site seem to have come by slightly less often, and for shorter stays than in earlier periods. Their tools were different from those who left the dense accumulations of hearths. Their small, highly standardized bladelets were similar to tools found only 30 km east at Nelson Bay Cave, near Plettenberg Bay. In fact, that tool industry, which archaeologists have named the Robberg, is recognized across southern Africa, suggesting widespread cultural connections.

The people living next to the Knysna River, flowing out between the rocky cliffs we call The Heads, were likely connected to this larger cultural group. Maybe sunnier locations with a view of

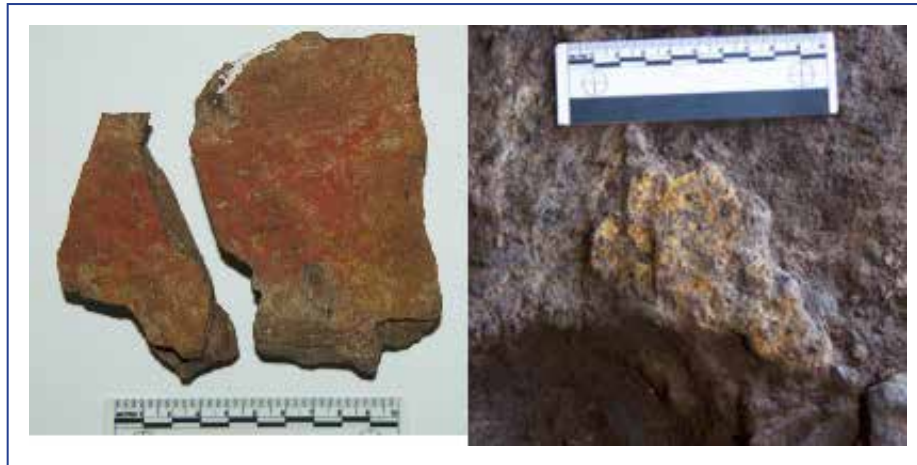


Figure 2.11 Red ochre powder on a slab of stone and a mass of yellow mineral powder. Both were found in hearth features dating between 26 000 and 22 000 years ago at KEH 1.

the river within the Knysna Amphitheatre were more attractive than KEH 1 at this time, although large game hunters still came by the site from time to time, and left evidence of their kills—including zebra and giant buffalo. Occasionally, small carnivores, including genets, took up residence at the site³⁴, further supporting the transient nature of the human presence during the LGM. Humans came to the site less and less frequently and finally not at all.

2.6 The last 10 000 years

Humans were likely in the Knysna area but did not return to the ocean-facing cave KEH 1 until the Holocene (after 11 700 years ago). Once the coast was again near its modern position, residents could harvest shellfish and other marine resources. Several sites around The Heads have thick shell midden accumulations dating to the Holocene. At KEH 1, the shell midden (a deposit made up almost entirely of the harvested shellfish remains) is almost 2 metres thick. This is not unusual - thick shell middens are common along the coast, and sometimes quite horizontally extensive as well. In addition to shellfish, the midden at KEH 1 includes the remains of some fish and mammals, as well as campfires and stone tools.

The loss of the Palaeo-Agulhas Plain not only decreased the amount of territory available to hunters and gatherers, but also meant the loss of the large gregarious herds supported by the nutrient-rich grasses that grew on the plain². This unique ecosystem of the Late Pleistocene became extinct. The land to the north of The Heads—the modern coastal plateau—could not then and does not now support the

same density of grazers that were available on the Palaeo-Agulhas Plain. A recent simulation of the impact of the loss of this plain on coastal foragers shows that the people who left the giant shell middens at KEH 1 and many other sites were probably under some amount of resource stress³⁵. It is also possible that local Holocene populations were larger than in the Pleistocene and growing. They were almost certainly less mobile as they focused intensively on shellfish and coastal resource extraction, and this may have further facilitated population growth. Based on isotopic evidence from human burials at one of the largest such middens at Matjes River near Plettenberg Bay, Sealy³⁶ has argued that the later Holocene (the last 3 000 years) may have been a time when groups were increasingly territorial with respect to food resources. We cannot yet determine how the Knysna landscape might have been divided among such groups (if it was), but the straits may have been a logical boundary dividing the eastern from the western headlands (Figure 2.2). There are large shell midden deposits on both sides. In the future, we may be able to directly compare these sites to build a more comprehensive picture of landscape use and the interaction of groups across the Knysna Basin.

The Holocene hunter-gatherers of Knysna undoubtedly combined coastal resources with a rich variety of estuarine animals (including fish, birds, and invertebrates) and edible plants such as sedges (see Appendix 1 for potential species). A recent experimental plant foraging study showed that sand fynbos vegetation, like that still preserved on the Western Head, provides exceptionally good caloric returns³⁷. Like the shellfish beds of the coast, the

Knysna Estuary—Jewel of the Garden Route

estuary presented foragers with stable, geographically concentrated resources. As others have noted, the presence of rich and defensible resources tends to lower residential mobility (the frequency with which people relocate their home), support population growth (in part because mobility is lower), and foster territoriality among groups¹⁶. Thus, we can imagine Holocene Knysna as a moderately crowded place (relative to much of the coastal plain), in which people kept a wary eye on the campfires across the lagoon.

2.7 Conclusion

The Knysna Basin and coast have been a magnet for humans throughout the Pleistocene and Holocene. Although there are numerous cave sites along the coast, some having archaeological sites within, our previous survey of the coast near Knysna found

these sites were densest close to The Heads. This suggests The Heads are a special and highly attractive feature of the southern coast. As the gateway between the lagoon (sometimes a river valley) and the sea (sometimes a coastal plain), The Heads likely provided a corridor for both humans and animals to move between these complementary ecosystems. Sites facing into the straits may have been used to control or exploit this corridor. Sites like KEH 1, with an elevated perspective over the Palaeo-Agulhas Plain, would have given ancient Knysnans an excellent view of distant foraging resources throughout much of the Pleistocene, and close access to shellfish beds during the Holocene. The Knysna Lagoon is an acknowledged biodiversity hotspot. It is also an archaeological hotspot, with an invaluable and rich long-term record of human adaptation and environmental change.



Figure 2.12 Sea view to the west of The Heads, across the Knysna Straits (Photograph: © Naomi Cleghorn).

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