

Where have all the moa bones gone? The archaeology of dune environments.
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Introduction

I was asked to give a presentation about archaeology in the New Zealand dune environment. An increased awareness of the potential of dune lands to contain archaeological features and materials is probably the one thing you should take away from this presentation and if I accomplish that then my goal is complete.

Due to the scope of the topic I have generally restricted my comments to the archaeology of sites of Maori origin. This is not a problem however as most of the site types you are likely to encounter would be of that origin.

Archaeology is all about the discovery, recovery and interpretation of the surviving evidence of past human activity, principally in the form of physical remains and environmental data, in its context in or above the ground. Essentially the aim of archaeology is to understand mankind.

Archaeological sites are distinguished from other forms of heritage sites due to the fact that they tend to be the relics and ruins of our past. They may be on land, in water, or in the coastal marine area.

Archaeology provides a means of studying past cultures, including our culture's past, where little or no other means to do so exist.

Legal protection of Archaeological Sites in New Zealand

Under the Resource Management Act 1991 archaeological sites are considered a matter of national importance requiring protection. This act places the onus of the protection of New Zealand's historic and cultural heritage on Regional and Local Councils and this protection is manifested in such documents as District Plans, Regional Policy Statements, and the like.

Archaeological sites are also specifically protected through other legislation, namely the Historic Places Act 1993 - the archaeological provisions of which are administered by the Historic Places Trust.

Under the Historic Places Act an archaeological site is defined as being a place associated with pre-1900 human activity, where there may be evidence relating to the history of New Zealand. It is illegal to damage any site that fulfills the definition of an archaeological site as per the Historic Places Act. However the Historic Places Act also set out how development may occur where archaeological sites do exist.

The Historic Places Trust preference, when it comes to development of an area containing an archaeological site or sites, is avoidance. If avoidance is not possible, and the site can be demonstrated to be of little or no significance, then mitigation is likely to be required.

Types of Archaeological Sites Commonly Observed in Dune Land Environments

Our definition of what an archaeological site is means that there are a large number of site types within the New Zealand landscape - 174 site types to be exact of which 76 can be categorized as being prehistoric and 99 as being Historic - with one overlapping site type. A number of these site types are to be found within dune landscapes and can either be associated directly with that type of landscape or, alternatively, site abandonment is a product of formation processes within such landscapes. Some of the site types that you may come across in the dune environment include the following;

Middens

'Midden' is an old English word for a household rubbish dump and this is the meaning used by archaeologists. Middens are places where food remains, such as shellfish and animal bones, ash and charcoal from fires, and broken or worn out tools were thrown away, dumped or buried.

Middens are one of the most common types of archaeological site found in New Zealand and definitely the most common found in dune lands. Middens can be of Maori, European or other origin, those of Maori origin being generally identified by an absence of materials such as glass, ceramics, brick, and metal and are predominantly comprised of shell.

Shell middens are usually found near the sea and are often made up of layers of shell and bone mixed with charcoal, ash and burnt stone. Within the dune environment they can be seen as low mounds and heaps or eroding from sand dunes or river and lagoon banks. Some middens contain Maori artifacts such as fish hooks, adzes and sharp stone flakes made from a variety of stone.

It is sometimes difficult to distinguish shell middens from natural heaps or layers of shells along the coast. Close inspection will usually reveal if the midden feature was formed culturally rather than by natural processes. Confirmation of whether or not a midden is natural or human in origin should be left up to an archaeologist or some other expert confident in the identification of such features. Note that such inspection may not involve the disassembly of the midden.

Archaeologists are able to recover charcoal, bones or shells that can be analysed using radiocarbon dating techniques to provide ages estimates for when sites were occupied. Sometimes by comparing archaeological specimens with modern samples it is possible to establish what season of the year a site was occupied.

Studying the contents of middens can show where people went to get their food, what proportions of different foods made up their diet, its nutritional quality and how it may have changed in different seasons or over long periods of time. For example, the study of middens in southern New Zealand has shown that early Maori first concentrated their hunting on moa and seals which were rich in protein and fat, but later on as these resources became scarce they turned to fish and shell-fish, supplemented by mutton birds and weka to maintain their diet.

It is mainly from the study of middens that we know about the numerous bird species, including moa, swans and eagles, that once existed in New Zealand but are now extinct. Midden studies have also shown that some animals were once common in areas where they are now rare. For example, elephant seals and fur seals had breeding colonies as far north as the Coromandel Peninsula 700 years ago, whereas now these are confined to the far south. Charcoal, seeds and land snails from middens can also enable the reconstruction of vegetation patterns from the past.

If close to mud-flats or estuaries a midden usually contains mostly pipis or cockles; paua, mussels and oyster are found in middens near rocky shores; and tuatua predominate near sandy beaches. Near lakes and rivers small middens of freshwater mussels are sometimes found.

Due to their frequency of occurrence and proximity to the coast middens are an at risk archaeological site type in New Zealand. Each year many middens are destroyed not only through the actions of nature but, unfortunately, uninformed human activity such as development or recreational activities such as off-roading.

Oven/Hangi

Another site type common in dune lands are ovens or hangi. Ovens are often identifiable by the presence of fire cracked rock, the rock having been used to retain heat within the oven.

Within the dune environment ovens are found either in situ within or atop a dune or in an eroded state at the base of a dune. An archaeologist will also recognize other evidence of food preparation activity associated with an oven such as burnt bone, charcoal, charcoal stained soils, and burnt sands.

The charcoal contained in ovens are the primary source of material for radio-carbon dating – being less problematic than dating using shell or bone. Ovens also supply similar dietary and environmental data as middens.

House Floors

House floors are the locations of camps and longer term places of residence. The study of house floors can tell the archaeologist something about prehistoric architecture, living arrangements, and strongly suggest the existence of other nearby archaeological remains.

Storage Pits

Storage pits may also be observed in more stabilized dune systems. Such pit features tell us things about subsistence strategies, seasonal migration and the local environment. The nearest dune land examples to Wanganui that I know of are those associated with the dune lakes district a few kilometres to the south of the city.

Borrow Pits

Borrow pits are where sand has been quarried for the use in gardening areas located behind dune lands. This type of is common along parts of the South Taranaki and Whanganui coastline.

Flaking floors

These are places where stone was flaked down into tools. Flaking floors are a common archaeological feature within the dune lands of South Taranaki and Whanganui. For this region flaking floors contain direct evidence of trade and communication between the local inhabitants and Maori of the South Island.

Mineral analysis of the stone flakes and cores found at such sites can often provide precise locational data of the source of that stone. This important evidence of a direct communication route between this coastline and the Nelson-Marlborough region has never been adequately studied and as we lose such sites through erosion and human activities we lose our ability to develop a significant understanding of trade and communication routes in prehistoric New Zealand.

Live Plants & Trees

A type of site not usually associated with archaeology are live plants and trees. Within the dune environment this type of site is generally restricted to taro. Although rare this far south, the remnants of taro fields can be found next to streams bisecting dunes and around dune lakes from the Waikato region north. I have also seen Polynesian kumara growing wild in the dune near Wanganui airport however it was not possible to determine whether or not this was the result of a more recent household rubbish disposal or a remnant wilding.

The recording and study of such botanical evidence is important in determining possible subsistence strategies for peoples previously living in and around that area as well as for environmental studies.

Burials and Human Remains

Dune lands are a common place for the disposal of human remains and, fortunately, most people will not destroy a site containing an obvious burial. Burials are of interest to archaeologists because analysis of the remains can tell us something directly about that individual's life – their diet, disease and activity.

Burials also often contain other archaeological evidence in the form of 'grave goods' which can be analyzed. Grave goods are often something of significance to either that individual and can tell archaeologists important information about that society or culture.

Should you come across human remains you are required to report this immediately to the Police who will then determine if the remains are associated with an illegal activity or a missing person. The Police will also inform a local iwi representative and, if there are doubts on the age of the remains or if they appear old, the Historic Places Trust.

Artifacts

Artifacts, particularly those made from stone, obsidian, shell or bone, may be found littered about within dune fields. Such artifacts are usually found as a result of erosion or other dune disturbance.

The most commonly found artifacts include adzes and sinkers, fish hooks, hand weapons such as patu and the like, and items of decoration. The presence of such items can indicate the potential location of a nearby camp or, perhaps, fishing kainga and analysis of the item not only tells the archaeologist about the source of the raw material but also, in the case of cutting implements, what the item was used on. Items of decoration can tell an archaeologist many things, perhaps none more important than that about the actual development of the Maori culture.

Under the Protected Objects Act 1975 any such toanga must be reported to the Ministry of Culture and Heritage – your local museum or DOC office can do this for you – who will then arrange the return of the item to iwi. Toanga found before this date are the property of the landowner.

Shipwrecks

Dune lands occasionally contain archaeological evidence from the historic period, that is, relating to that part of New Zealand's history after the arrival of the European and others. One type of archaeological site that you may come across is the shipwreck. All shipwrecks prior to 1900 are considered to be an archaeological site and, therefore, are subject to the same protection as land-based archaeological features.

During the nineteenth century there was the occasional wreck as ship captains mistook where the entrances to harbors' were and beached their vessel or where storms forced ships on to the beach. In the years following those events the actions of dune formation and accretion have buried a number of those wrecks that were not salvaged above the high tide mark.

Possibly the best local example is the wreck of the Fusilier in 1884. This wreck is located in the dunes lands adjacent Santoft Forest, some 20 km to the south-east of Wanganui. Although the location of this wreck was known some 20 years ago, it is now lost due to it being completely buried by shifting sands. At least two attempts have been organized to relocate this vessel in recent years but to no avail.

Hulks and Other Dune, Foreshore, or River Control Mechanisms

Hulks and other dune, foreshore or river control mechanisms such as walls, fencing, and the like put in place prior to 1900 are archaeological sites. Some of the river and dune stabilization activity at the Whanganui river mouth can be considered as such.

Coastal Defenses of WWII

While not an archaeological site as defined by the Historic Places Act 1993 evidence relating to the coastal defenses of World War II are another relic of the past that is commonly found in dune lands around New Zealand. Their special place in New Zealand's heritage is often recognized by the local community and, in many cases, protection of these features is afforded through the local District Plan.

Within dune lands the most common feature of this era is the pillbox – the actual coastal gun platform and observation posts generally being on more stable and higher soils. Other features the trained eye may observe are tank traps, barriers and trenches.

Distribution of Archaeological Sites

Given that New Zealand is comprised of a number of islands and that the inland areas of the larger island are rugged and mountainous it should not be of surprise to anyone that the majority of archaeological sites recorded in this country are found within 10 km of the coastline. Like today, the coastline was a very popular place to settle – either permanently or seasonally – due to access to resources and for communication reasons. The coastal dune lands of New Zealand can, therefore, be a productive region of research and investigation for the archaeologist.

The frequency of sites in any given region is in direct correlation to the degree of settlement activity in that part of New Zealand. This settlement activity is considered to have been determined by the ability to grow particular Polynesian cultigens such as taro, yam, and kumara in that part of New Zealand.

Dune land landscape studies conducted around New Zealand have demonstrated a definite pattern in regards to occupation and use of the resources of dune lands and adjacent lands. At Tauroa Point, Northland, a region of extensive dune lands with sandstone outcrops, archaeological evidence of occupation and resource use is largely contained within coastal dune lands and alongside areas of inland waterways and dune land lakes.

So where are the Moa Bones?

It would be truly Machivalian for me to conclude this presentation without referring to my teaser in the title of this presentation.

If the results of radiocarbon dating in New Zealand were plotted on a map of the country a very clear pattern would quickly emerge. This pattern would show that the overwhelming majority of earlier, that is pre-AD1500 or 'moa-hunter', sites were located along the coastline – more so than the distribution of later sites which still, nevertheless, favour the coast. These results would likely show that people occupied and lived in the coastal dune environment and alongside coastal waterways much like the settlement pattern observed at Tauroa Point but at a greater scale.

However unlike later times where a growing population and, consequently, the threat of hostilities caused people to reside at safer places inland and make seasonal trips to the coast, the 'moa-hunter' or archaic phase of the settlement of New Zealand probably saw the opposite occurring. People lived near their primary food sources, which in the case of the Polynesian settlers of New Zealand was the sea and lowland moa, and regular voyaging

between Polynesia and New Zealand meant that it was logical to have their residences along established lines of communication.

So where are the moa bones and other evidence associated with these foundation settlers?

While it is true that we are dealing with a relatively small population we know the type of environment and settlement locations preferred by these people. We also know that this settlement was largely confined to coastal zones, as demonstrated by the early archaeological survey maps. We have written observation from the mid- and late-eighteenth century describing the remains of moa-hunter camp sites – the shell middens, ovens, and remains of moa. We even have photographs of these camp sites and these photographs show that the remains of moa processing sites were not hard to find.

Therefore the evidence of this early phase of settlement in New Zealand should, surely, be fairly easy to find?

While it was true that the European settlers of this country enjoyed collecting moa bone – there are historical accounts of families spending a pleasant weekend afternoon collecting moa bones across the Whanganui river along what is now the dune lands of South Beach – this can not fully explain what appears to be a near total absence of such material in our dune lands today.

The answer to the question “where have all the moa bones gone” lies deeper. We are all very much aware of the processes of dune movement and the answer is literally blowing in the wind. The moa bones, and other cultural features associated with that era, are still there – they’re just buried under the shifting dunes.

The presence of these sites under many of our dunes in South Taranaki has promoted a leading academic to describe the area as the “the richest area of moa-hunting sites in the North Island”. The same may also be said of parts of the coastline between Wanganui and Otaki.

But what applies to the remains of the moa and cultural materials associated with those people who hunted this bird is not limited to the archaeology of pre-AD1500 New Zealand. The same processes affecting moa hunter sites also affect sites of a more recent origin, both Maori in origin or otherwise – the earlier example of the Fusilier should adequately demonstrate this.

Again while much surface evidence of archaeological material of Maori origin has been plundered during the last 150 years, Buist (1976) noting “on the low coastal dune known as Waipipi ... Piles of shells, flaked stone, small ovens and fashioned net-sinkers were visible until a few years ago. Elson Best [a noted New Zealand anthropologist and writer] visited Waipipi early this [i.e. last] century and took away a dray-load of sinkers for the Dominion Museum; later it became more convenient to use a Landrover”, the majority of archaeological sites within the dune lands of this country are still hidden from view today, only to be revealed as a result of erosion activity, recreational activities or development.

Even at Waipipi, after a hundred years of fossicking and then two decades of intensive sand mining, two new sites were discovered during the past 12 months as a result of archaeological survey work undertaken prior to recent developments. No doubt more will be present, buried in the remaining dunes.

Another example of this hidden world can be demonstrated using this map of known archaeological sites around the dune lake of Pauri, a few kilometres to the south-east of Wanganui. There is no reason to believe that occupation and resource use of Lake Pauri was different between the northern and southern sides. However whereas the soils of the north lake edge is comprised of Egmont Ash and, therefore, less likely to erode, damage and

obscure archaeological features such as pits, terraces and midden, the southern side is dune which, prior to stabilization for farming purposes would have shifted over time, therefore destroying or obscuring such features.

Summary

Members should be aware of the potential of dune lands to contain archaeological features and materials and that these features and materials are protected.

As mentioned at the start, if nothing else, this should be the one thing you take away from this presentation.

Consult an archaeologist or New Zealand Archaeological Association filekeeper early in the planning phase to see if there are any recorded archaeological sites. Consult with iwi for sites or wahi tapu that they may only know about. Be able to recognize potential archaeological sites. Your local DOC conservancy office can often help or, at least, put you on to someone who can assist you with these things. Your local council can also advise.

Just because you can not see anything at a particular location does not mean that archaeological sites are absent in that location.

Avoidance of site damage is the best approach. If damage to an archaeological site can not be avoided then mitigation will be required.

It is easier, and less costly, to avoid than mitigate. Work with your local archaeologist, whether they be DOC or otherwise, and the regulatory authorities. Involve these people early in the planning phase.

Information and data obtained from archaeological sites is not only important to archaeologists. It is used by a wide of scientific disciplines and, in the cases of sites likely to be of Maori origin, these sites can be of significance to iwi.

Damage, accidental or otherwise, deprives a range of scientific disciplines of information, not just archaeologists.

If you come across an archaeological site during a dune restoration project contact your local DOC archaeologist – they gladly come out to record the site or put you on to someone better placed to do this. They'll also advise you on what to do next. If mitigation is required then you've probably got a very good chance to be involved in a real archaeological excavation!

And always have iwi as a partner in your projects – they're often the ones with the best local knowledge.

Recommended Reading

New Zealand Historic Places Trust
'Middens and Rubbish Dumps' (brochure).
'Shipwrecks and Underwater Archaeological Sites' (brochure).
'Applying for an Archaeological Authority' (brochure).

District Plans
The heritage or archaeological section of your local District Plan.

Internet
'Tauroa Point Prehistory Project'. Website: <http://www.arts.auckland.ac.nz/departments/index.cfm?P=9170>

Note: a referenced and fully illustrated copy of this presentation is available by writing to the author C/- Department of Conservation, Private Bag 3016, Wanganui.