

Context:

Gabriola, archaeology

Citations:

Doe N.A., A context for Gabriola's archaeology, *SHALE* 15, pp.36-43, May 2007.

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Reference:

Date posted:

May 20, 2015.

A context for Gabriola's archaeology

by Nick Doe

This is an expanded version of a note on local archaeology published in *SHALE* 1 (pp.9–10). It is published here for general interest, but should not be taken as authoritative. I apologize to, and empathize with, readers who think references to archaeology in Britain are parochial, but stone circles and iron-age forts on the chalk downs of Berkshire in southern England were within easy hiking and biking distance of where I grew up. Throughout the article, I have given priority to calendar (BC/AD) dates, as used in documentary history, rather than uncalibrated “before present” radiocarbon years (BP ¹⁴C),¹ which, for good reasons, are common in North American technical literature, but confusing to the non-expert.²

In the beginning...

Unlike in Europe, Asia, and Australia, there is no substantive evidence of a hominid species being in the New World prior to the arrival of *Homo sapiens* (modern man). Few experts anticipate that any such evidence will be found. Consequently, while the history of hominids in Eurasia stretches back almost a million years—starting with *Homo erectus* in East Asia and *Homo heidelbergensis* (or their ancestors) in Europe—the hominid history in the New World is comparatively “recent” if only because *Homo sapiens* only evolved in Africa about 200-thousand years ago.

The earliest *Homo sapiens* (Cro Magnon) sites in Europe date back at least 45-thousand years, and even older dates approaching 55-thousand years are found in Australia. Some molecular genealogists studying the mutation rates of mtDNA claim that arrival dates for the ancestors of the current North American Indigenous

population in the 30-thousand years ago range are not unthinkable; however, even the most controversial archaeological sites in the New World are not more than 20-thousand years old.

The classical theory of the peopling of North America, now under much scrutiny, is that it all began at the end of the last Ice Age (the start of the geologists' Holocene) about 13-thousand years ago, or 11000 BC. Immigration was from northeast Asia. The oldest *Homo sapiens* sites there date back 25-thousand years. Whether or not there were people in the Americas before 11000 BC, and if there were, where they came from—the hints are southeast Asia—and what happened to them, are fascinating questions, but they are, for all that, not questions that archaeologists working on the Gulf Islands are going to answer. During the Ice Age, Gabriola, like most of British Columbia, was buried deeply beneath ice at times almost a mile thick, and no one could possibly have lived here.

¹ “Present” for radiocarbon dates is 1950 AD because that’s when the dating technique was first used and because atomic weapons testing in the atmosphere soon after rendered the technique useless for the second half of the century. See Appendix 1 for a brief note on radiocarbon dating technology.

² Why archaeologists use *calibrated* BP dates is beyond me; the Battle of Hastings was in 1066 AD, not 884 BP. Some authors even fail to make it clear whether their radiocarbon dates are calibrated or not. It causes endless confusion.

During the Ice Ages (the geologists' two-million year long Pleistocene), global sea levels were much lower than they are today. However, *relative* sea level in the Gulf Islands was very high because the land had been pushed down into the Earth's soft mantle by the tremendous overburden of ice.

Old beaches (benches) on Gabriola that are way above current (relative) sea level are ancient remnants of the Pleistocene high, and pre-date the arrival of humans in the area.³ By the time that humans did reach the Gulf Islands, sea level had already dropped to its lowest point and was slowly rising again, as it continues to do to this day.⁴

In Britain too, ice covered much of the northern part of the country. All times prior to the end of the last Ice Age are known there as the Palaeolithic or "old stone age".

Early period 11000⁵–4500 BC

Overview

The rapid expansion of people into the New World at the end of the last Ice Age is

³ Steven Earle, *The ups and downs of Gabriola—sea-level changes*, *SHALE* 5. In Figure 5 on page 16, the dark area shows the movement of land relative to a fixed sea level; however, if you turn the page upside down, the white area shows sea level change relative to a fixed land level with time moving right to left.

⁴ The on-going rise is no longer attributed to ice-age recovery but to a combination of global warming and tectonic depression of the Strait of Georgia and corresponding uplift of the west coast of Vancouver Island. Relative sea level was lowest after isostatic rebound of the land *ca.* 9500 BC.

⁵ 11500 BP ¹⁴C. Geologists define the Holocene as starting 10,000 years ago knowing full well that when the Ice Age actually "ended" is a matter of definition and geography. The ice melted in the Strait of Georgia in the 12500–11000 BC timeframe (13000–11000 BP ¹⁴C).

usually attributed to an abundance of unwary, large game animals, and the absence of other hominid competitors. Within a thousand years, the paleo-Indians had reached Tierra del Fuego at the southern tip of South America.

Agriculture first appeared in the Middle East around 10000 BC and independently in the Americas around 8000 BC.

For most of the Early period (after 8000 BC),⁶ the local climate (thanks to the Milankovitch cycles) was hotter and drier than it is now. To climatologists, the period is known as the *hypsihermal*. There were no forests on southern Vancouver Island or the Gulf Islands, only Garry-oak and Douglas-fir savannahs, and grasslands, parched and often burnt in summer. Land and sea mammals were the most important sources of food.⁷

The Early period in Britain corresponds to the Mesolithic, a time when most made a living in widely-scattered, hunter-gatherer groups. It was around 7000 BC that the land bridge between England and the continental mainland of Europe was severed.

Just to make sure that we have our bearings here, there is in the Early period, nowhere in the world, with the possible exception of a few places in Mesopotamia, anything that we would call a "city" or even a town. The ancient civilizations of Greece, China, and India; the pyramids, Stonehenge, and all that were yet to be. The Sahara Desert was at this time a lush savannah, teeming with wildlife and fish-filled lakes.

⁶ *ca.* 9000 BP ¹⁴C uncalibrated.

⁷ The list includes deer, elk, beaver, bear, canines, mink, weasel, martin, river otter, porcupine, seal, sea-lion, and dolphin. We don't know what plants were used for food because, other than the occasional burnt cherry pit and scratch marks on teeth, they don't leave traces in the archaeological record.

11000 BC–7000 BC timeframe (11000–8000 BP ¹⁴C)

There are no archaeological sites anywhere in western North America (Cascadia) that are indisputably dated before about 11000 BC. Archaeological sites in the 11000–7000 BC timeframe only occur in British Columbia on the coast, and then only further north than Vancouver Island (at Namu) and on Haida Gwaii (Queen Charlottes). Such sites are very few and far between, even in Alaska.

A few stone tools (Clovis points) that were likely made between 9500–7000 BC have been found in southern Puget Sound, and there are paleo-Indian sites from this time along the Columbia River, but these are surface sites and only limited information can be drawn from them. This is one of the reasons why the dating of “Kennewick man” in Washington State to around 7500–7000 BC⁸ has aroused so much interest.

7000 BC–4500 BC timeframe (8000–5700 BP ¹⁴C)

The oldest known archaeological site on Vancouver Island is at Bear Cove near Port Hardy which has been dated to around 7050 BC.⁹ The Glenrose Cannery site on the estuary of the Fraser River is about the same age, and artifacts recovered there are similar to those recovered at Bear Cove. Cattle Point on San Juan Island was also likely occupied at about this time, and a lithic culture type was also in existence by around 7000 BC in the Fraser Canyon. There are however no archaeological sites on the Gulf Islands that have been dated this

far back. None of the sites in the Early period is a midden site.

Middle period **4500 BC–500 AD**

Overview

Somewhere around 4500 BC (the change was gradual) the climate on the northwest coast cooled; it got wetter; and the rainforests began to develop. The post-Ice Age rate of rise in sea level declined to the point where there was not much change within the span of a human lifetime. The first permanent winter villages and shell middens appear around 4500 BC, and this date is often taken to mark the beginning of the Middle period on the northwest coast.

Perhaps not entirely by chance, 4500 BC is also a significant date in British archaeology as it marks the end of the Mesolithic and the introduction of farming (the Neolithic). The first complex civilizations in the Americas also arose around this time.

4500 BC–3000 BC timeframe (5700–4400 BP ¹⁴C)

The forests that gradually invaded the former grasslands were mainly western hemlock; there were still no mature cedar forests. Pithouses appear widely in the archaeological record in the interior of the region, and they may have been used here on the coast.

It was in this timeframe that farmers, or farming, first arrived in Britain. Woodland was cleared to establish pastures for cattle, pigs, and sheep. Settlements became more substantial and more permanent. Long barrows were built from 3500–3000 BC.

In Egypt, settlements along the Nile from 4500 BC onwards became towns, and the first dynasty was established there around

⁸ 8410 and 8130 BP ¹⁴C uncalibrated.

⁹ 8020 BP ¹⁴C uncalibrated.

3000 BC. It is reckoned that the Sahara Desert became a desert at about this time.

The earliest archaeological evidence of habitation in the Gulf Islands has been found on North Pender Island. A site there goes back to 4000 BC.¹⁰

3000 BC–1200 BC timeframe *(4400–3000 BP ¹⁴C)*

Shell middens first become common in the Gulf Islands after 3000 BC, and although none have been dated this far back on Gabriola, it would be no surprise if one were to be, given that they have been on neighbouring Valdes Island.

It was probably around 3000 BC that mature cedar rainforests first became common on the coast. Not surprisingly, this was the timeframe when heavy wood-working tools appear in the archaeological record and progressively larger village sites appear. The earliest evidence of plank houses is dated to the end of this timeframe.

The southwest British Columbia regional **Charles culture** is dated from 2500–1200 BC. An increasing emphasis on the exploitation of marine resources becomes evident in this phase.¹¹ There is a significant increase in ground stone technology, and a substantial decrease in the older-style pebble tools. Bone and antler tools are common. About 15 sites are presently known for the Charles Culture in the Strait of Georgia. Compared to later cultures, the Charles culture is often

¹⁰ 5170 BP ¹⁴C uncalibrated at DeRt-2.

¹¹ The coastal Charles culture includes the Mayne phase and St. Mungo phase, which are regarded as variants. Pre-Charles-cultures, in which people relied mainly on terrestrial resources, is known in Washington State as the Cascade phase, 7000–2500 BC.

characterized as being relatively impoverished and egalitarian.

In Britain, the Neolithic suddenly ended in 2000 BC and was followed by the Early Bronze Age. Warrior elites represented in rich burials occur from 2000–1500 BC. Round barrows become numerous. Stonehenge was constructed from 3000–1700 BC.

Elsewhere in the world, the great pyramids were built around 2600 BC; the Harappan civilization in the Indus valley flourished between 2500–1600 BC; the earliest of the great Chinese empires, the Hsia Dynasty, arose around 2200 BC; Minoan civilization was devastated by the eruption on Thera (Santorini) in 1628 BC; and Troy was sacked by the Greeks in 1290 BC.

The earliest archaeological record on Gabriola is a cave burial that has been radiocarbon dated to about 1500 BC.¹²

1200 BC–400 BC timeframe *(3000–2600 BP ¹⁴C)*

On Vancouver Island, the Charles culture developed into the **Locarno Beach culture** dating from 1200–400 BC. This is the first culture thought to have exploited salmon- and other seasonal fish- processing and year-round storage on a large scale. The Locarno Beach culture distinguishes itself from the earlier Charles culture by higher population levels, plank-house villages that people may have occupied for all or most of the year, and a greater variety of artifacts.

In Britain, this timeframe encompasses the Late Bronze Age (1200–800 BC) and Early Iron Age (800–400 BC). In Mexico, it was the time of the Olmec, the first of several civilizations in that country. In the US

¹² 3200 BP ¹⁴C uncalibrated at DgRw-199.

southwest, roving bands settled into a more sedentary lifestyle gathering smaller animals and plants, and building homes in canyons and river valleys. Rome is said to have been founded in 752 BC, and the classical ancient Greek civilization ran from 776 to 323 BC.

400 BC–500 AD timeframe (2600–1575 BP ¹⁴C)

The **Marpole culture** of the Strait of Georgia is marked by the rise of ranked societies, distinctive artwork, high populations, a greater variety of items of personal adornment (labrets, earspools) and large houses made with heavy woodworking tools (adzes, wedges, mauls). Wealth accumulation and hereditary status are indicated in grave goods. Food is prepared by stone boiling, pit roasting, and steaming. Cranial deformation, rare in the Locarno phase, becomes common in the Marpole phase. Copper appears in the Marpole phase, as does evidence of warfare in the form of clubs, daggers, trophy skulls, and skeletal trauma. The False Narrows site dates from mid-Marpole times.

In Britain, the time from 400 BC–40 AD was the time of the Celts. The traditional story of the Celts is that they were a people who had spread out across Europe by a series of invasions, but this history is at odds with the archaeological evidence that no such physical invasions occurred. The spread of Celtic culture is now seen rather as the result of its development and adoption by adjoining and allied groups with increasingly close trading, social, religious, artistic, and linguistic connections. The lack of political unity of the Celts however, despite their fierceness in battle, ultimately led to their defeat and subjugation by the much better disciplined armies of Rome.

The Romans ruled Britain from 40 to 400 AD.

For those who love apocryphal stories, I should mention here the great journey of the Buddhist monk named Huishen (Huei Shan, Hui-shên, Hoei-shin) from 458 to 499 AD. There is the faintest of possibilities that he returned to China with an account of the BC coast.¹³

Late period **500–1774 AD**

Overview

The regional **Gulf of Georgia culture**¹⁴ is dated from 500–1774 AD and is contiguous with the historical contact period.

The archaeology of the Late period shows a continuation of earlier traits but with strong signs of outside influences, a decrease in political complexity, and towards the end of the period, a smaller population. Wood carving continues but chipped stone ceases; weaving and basketry become important; bow-and-arrows replace spears; tobacco is used; and fishing implements become more sophisticated (herring rakes and composite toggling harpoon heads). Midden burials, common up until 1300 AD, rather mysteriously abruptly decrease and regular interment only resumes when Christianity arrives. Villages with palisades and defensive earthworks, oral tradition, and historical records together indicate that warfare intensified from around 800–1000 AD and persisted until the 1860s. The Snunéymux^w have several oral histories about the battles that they fought.

¹³ Scott Lawrance, *Buddhist Columbia*, pp.67–9, Raincoast Chronicles First Five, 1971; Grant Keddie, *The Question of Asiatic Objects on the North Pacific Coast of America: Historic or Prehistoric?*, Contributions to Human History, 3, Royal BC Museum, March 19, 1990.

¹⁴ Known as the **San Juan phase** in Washington State.

500–1000 AD timeframe ***(1575–1000 BP ¹⁴C)***

Traditionally, this timeframe is regarded archaeologically as a transitional phase that followed the Marpole phase, but recent work has hinted that the notion of a gradual transition to the Gulf of Georgia phase may not be the whole story and that there may have been a sharper change around 1000 AD. Some archaeologists prefer to regard this period as a continuation of the Marpole phase. Cairn burials are particularly evident on southern Vancouver Island at this time.

In Britain, the “Dark Ages” followed the withdrawal of the Romans. Invasions by Angles, Saxons, Jutes, and Danes culminated in the first recognizable kingdom of England in 937 AD with alliances with the Celtic rulers of the Scots, Welsh, and Cornish Britons.

The bubonic plague reached Britain around 550 AD, but there is no way of knowing how many it killed. Contemporary sources called it “the Great Death”.

The classic period of the Mayan civilization in Mexico ran from 250–900 AD, and the reasons for its demise are still debated by archaeologists. The golden age and decline of the Tang dynasty in China in the same timeframe has led to speculation that weak monsoons and crop failures between 700–900 AD may have contributed to the social changes taking place at this time.

1000–1530 AD timeframe ***(1000–300 BP ¹⁴C)***

The climate was especially benign in Europe in the 1100 and 1200s—the cathedral-building age—but 1300 to 1850 AD is

known in Europe as the Little Ice Age.¹⁵ While this caused hardship for European peasant farmers and disaster for Greenland settlers, the cooler weather would have improved salmon runs here on the coast.¹⁶ A recent survey (2005–7) in the San Juan Islands indicates a dramatic rise in the number of sites there between 1000–1500 AD. Populations also peaked in the now-desert regions of the US southwest.

In Britain, this timeframe corresponds to the medieval period. “Black death” appeared in Britain in 1349 AD and by the time the plague had run its course in 1370 AD, the population had dropped from between five and six million to not much more than two million.

Cholera, whooping cough, and scarlet fever may have evolved in the Old World around 1500 AD. There was a smallpox¹⁷ pandemic in the Americas in the 1520s, but it is not known if it reached the Pacific northwest.

This was the time of the Inka empire in Peru (to use Quechuan spelling) 1200–1572 AD, and the Aztecs in Mexico, 1250–1521 AD.

1530–1774 AD timeframe ***(300–190 BP ¹⁴C)***

Little is known about local history in this timeframe, but population density appears to have dropped markedly after 1500 AD.

¹⁵ Brian Fagan, *The Little Ice Age—How Climate made History*, Basic Books, 2000.

¹⁶ James C. Chatters, V.L. Butler, M.J. Scott, D.M. Anderson, and D.A. Neitzel, *A paleoscience approach to estimating the effects of climatic warming on salmonoid fisheries of the Columbia River Basin*, in R.J. Beamish [ed.], *Climate change and northern fish populations*, pp.489–96, Can. Spec. Publ. Fish. Aquat. Sci. 121, 1995.

¹⁷ Believed to have made its first appearance in Egypt *ca.* 1200 BC.

Contact between the people on the BC coast and Europeans began with the voyage of Juan Pérez to Haida Gwaii from Mexico in 1774, but more significant events for the local people were the arrival of fur traders on the west coast of Vancouver Island after Cook's voyage in 1778 and the establishment of Fort Langley by the Hudson's Bay Company in 1827.

Of even more significance was the devastating smallpox pandemic around 1782–3 that killed two-thirds of the population on average and locally more. The people of the northwest coast were especially vulnerable to introduced diseases because of their previous isolation. Even syphilis and tuberculosis, which were probably pre-Columbian New World diseases introduced to the Old, appear not to have been present here.

Petroglyph dating

Petroglyphs are very difficult to date. The only estimate we have of the age of a local petroglyph is that of a petroglyph on Protection Island. Undisturbed charcoal possibly associated with the petroglyph was found to be about 400 years old.¹⁸

Natural catastrophes

In the past few years, there has been an increasing interest in the possible role of natural catastrophes in cultural change. Coincidence or not, the eruption of Krakatoa in 535 AD did occur at a time when a lot was happening in the world. That eruption was much greater than the famous one of 1883 and evidence for it is found around the globe and in both polar icecaps. According to a Roman chronicler, the darkness of the sun following the eruption lasted 18 months. Locally, the weather would have intensely

cooled for two or three years and then warmed as the dust settled and the greenhouse effect of the volcano's gases came into play.

However, although records of volcanic eruptions, earthquakes, and tsunamis will likely eventually be found in the Gulf Islands; and while such linkages with human affairs are always interesting; proving a link between a cultural change and a particular natural event will be a challenge.

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¹⁸ One sample, 1605, and a second, 1675 AD.

Ian Tattersall, *Once we were not alone—other hominid species*, Scientific American, pp.56–62, January 2000.

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Appendix 1—Radiocarbon dating

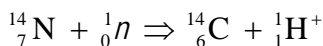
The radiocarbon dating method is based on measurements of the radioactivity of organic material—mostly shell, bone, and charcoal.

The carbon in all living things includes a tiny proportion of mildly radioactive carbon (carbon-14 or ^{14}C) in addition to the non-radioactive forms (^{12}C and ^{13}C).¹⁹ This radioactivity is generated by subatomic particles from space (cosmic rays) that collide with the nuclei of nitrogen atoms (^{14}N) in the atmosphere creating, after oxidization, radioactive molecules of carbon dioxide.²⁰ Some of this carbon dioxide is taken up by living organisms.

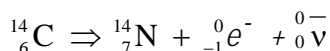
While an organism is alive, the level of radioactivity within it remains close to the level that exists in the atmosphere. Once the organism dies however, absorption of carbon ceases, and the level of radioactivity gradually declines,²¹ halving on average,

¹⁹ The ratio of ^{12}C to ^{13}C in inorganic carbon is about 100:1 but biological carbon is depleted in ^{13}C . Scientists and archaeologists use this isotopic ratio to research the origin of the carbon they find.

²⁰ This process is essentially one of replacing one of the protons in the nitrogen nucleus with a neutron.



²¹ In the decay, (effectively) the surrogate neutron reverts to a proton along with an electron to conserve charge and an antineutrino to conserve momentum.



once every 5730 years. The intensity of this radioactivity thus provides a measure of how long the organism has been dead.

A complication of the method is that the level of radioactivity of carbon in the atmosphere has varied over time. The variation is not great, but it does have to be included in the accounting. Radiocarbon dates have been calibrated by a whole variety of independent methods including dating by counting tree-rings and analysis of ancient deep-sea marine corals. The current limit for radiocarbon dating calibration is about 25 thousand years, but other techniques are available for older material.

Another complication that applies only to the dating of shells is that the carbon in the ocean is older than the carbon in the atmosphere. The so-called “reservoir age” of dissolved carbon dioxide and carbonic acid in the eastern Pacific Ocean is currently reckoned to be about 790 ± 25 years.

Appendix 2—Borden numbers

Archaeologists identify sites by Borden numbers; for example, DhRx-26 is one of many small shell middens on Gabriola. The letters define a geographical area by latitude and longitude and the numbers are allocated sequentially within that area.

One number may cover several features at a complex site, a panel of petroglyphs for example. It is left to the initial investigator to assign identification tags to the individual features at a particular site and the convention in the archaeological world is that these same tags—numbers or letters—are always used, unaltered, in subsequent site reports. This avoids the confusion that would result if everybody were to invent their own system. \diamond