

# WHALES AND WHALERS IN NUU-CHAH-NULTH ARCHAEOLOGY

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## INTRODUCTION

**M**UCH HAS BEEN WRITTEN about whaling among the closely related Nuu-chah-nulth and Makah peoples of western Vancouver Island and the tip of the Olympic Peninsula, along with the pervasive role this practice had in the economic and social systems in these communities. Most sources, however, treat whaling as a single uniform activity, rarely distinguishing between prey species, despite their differing patterns of migration, behaviour, and accessibility. Nor is whaling generally seen in terms of the individual actions and decisions of whaling chiefs, rather than as a more general cultural pattern of community economic activities. This article presents the results of recent studies that identify whale species through bones recovered from archaeological sites in Barkley Sound, western Vancouver Island. It also uses archaeological and ethnographic data to interpret the evidence associated with whaling in terms of the actions of ancient whaling chiefs.

According to ethnographic traditions, whaling emerged on the outer coast in northern Nuu-chah-nulth territory (Drucker 1951, 49). Whaling may have been the key adaptation that sustained large permanent villages on the outer coast, and several researchers have argued that it was the mastery of whaling techniques that allowed movement of the Nuu-chah-nulth and their relatives along the outer coastline and islands into their historic homelands (Arima 1988, 23; Marshall 1993, 138, 143). Changing sea levels, however, have limited our understanding of the earliest adaptations, and most archaeological knowledge comes from large villages near the modern shoreline that date to within the past two millennia. Archaeological surveys in Barkley Sound show numerous large villages, with deep deposits, concentrated near the outer shores (Haggarty and Inglis 1985; McMillan 1999). These large villages were the political centres, occupied year-round by at least part of the population. Only in much more recent times, following major population declines leading to group amalgamations and the adoption of a seasonal pattern

of movement, were most reduced to summer resource camps (Marshall 1993; McMillan 1999; McMillan and St. Claire 2005, 2012; St. Claire 1991). Salmon played a relatively minor role in the diet of these outer coast people, who lacked access to major salmon streams. Instead, the economy depended on a wide range of fish, particularly near-shore species such as herring, rockfish, and greenling; and sea mammals, particularly whales, porpoises, dolphins, and fur seals (McMillan et al. 2008; Monks 2011).

Various factors confuse the understanding of past whaling practices based on whalebone recovered from archaeological sites. As is discussed below, numerous taphonomic factors affect whalebone abundance and the distribution of various elements across the site. Distinguishing between purposefully hunted whales and scavenged “drift whales” is also fraught with problems. In addition, cetacean remains are commonly found as fragments that defy attempts to determine species through traditional methods. Despite the great abundance of whale bones in archaeological sites throughout the Nuu-chah-nulth and Makah homelands, little information is available as to the species represented. Prior to the Barkley Sound research reported here, only the Makah site of Ozette had a substantial number of identified cetacean elements. The relatively recent advent of techniques to examine ancient DNA, however, now allows accurate species identification from even small fragments (e.g., Arndt 2011; Yang, Cannon, and Saunders 2004). This article reports the results of such studies on archaeological materials from a series of sites in Barkley Sound.

#### THE WHALING PEOPLES

The Nuu-chah-nulth and Makah, with homelands along the outer coastline adjacent to whale migration routes, were the pre-eminent whalers of the Northwest Coast. Whale bones occur in considerable numbers at virtually all excavated sites in their territories (Marshall 1989; McMillan 1999). Large harpoon valves and other evidence of specialized whaling gear, plus items adorned with whales or whaling imagery, occur at many sites, although generally in relatively late time periods. Nuu-chah-nulth ethnographic traditions are filled with tales of famed whalers (e.g., Sapir et al. 2004). Images related to whaling dominate Nuu-chah-nulth and Makah art, from archaeological objects to recent creations (Coté 2010; McMillan 2000). Thunderbird, the whaler of the supernatural realm, is commonly depicted, often in association



Figure 1. Thunderbird swoops down from the sky to prey on the whale in this print by Nuu-chah-nulth artist Patrick Amos (“Thunderbird and Whale,” 1990; original in black, red, green, and blue on white; used with permission of the artist).

with the whale (Figure 1). Also frequently appearing is the lightning serpent, which was hurled as a harpoon by the thunderbird in his quest for whales (Densmore 1939, 23; Sapir 1922, 314; Swan 1870, 8). Ethnographic accounts tell of great whalers receiving powers from encounters with thunderbird or lightning serpent, whose images they then displayed on painted screens set up in the houses for public events (Sapir et al. 2000, 53-54, 57-61). The pervasive nature of the whaling images symbolically reflects the cultural importance placed on whaling in these societies. Whaling traditions continue as a vital aspect of Nuu-chah-nulth and Makah identity today, as reflected through their art, stories, songs, ceremonies, and chiefly names (Coté 2010).

Only high-ranking individuals could lead the whaling expeditions and thrust the first heavy harpoon into the animal at the water surface. Supernatural assistance was required for such a perilous venture, leading to rigorous periods of ritual purification, including prolonged bathing and imitating the movements of the whale, involving the whaler and his wife (Arima and Hoover 2011, 59-60; Coté 2010, 26-27; Curtis 1916, 16; Drucker 1951, 169-70; Gunther 1942; Sapir 1924; Sapir et al. 2004). Successful hunts

enhanced the prestige of whaling chiefs, publicly demonstrating their political status, physical prowess, and ritual power.

Many elements of this whaling complex spread to the neighbours of the Makah: the Quileute and Quinault to the south along the outer Washington coast (Curtis 1913; Frachtenberg 1921; Olson 1936; Reagan 1925) and the Klallam to the east on Juan de Fuca Strait (Gunther 1927). Whaling among these groups featured not only the same technology as the Makah but also similar ritual and ceremonial practices that were clearly borrowed from the Makah, reportedly in quite recent times. Individuals from a few other Salish groups along Juan de Fuca Strait also occasionally harpooned whales (Suttles 1987, 235), but this was not a general practice.

Discovery of a stranded, or “drift,” whale was a happy event for groups all along the Northwest Coast (Drucker 1965, 19). Some Nuu-chah-nulth chiefs conducted specific rituals, involving “shrines” with human remains and carved representations of ancestors and whales, to cause dead whales to drift ashore (Drucker 1951, 170-73, 255; Jonaitis 1999; Sapir et al. 2004). Even if the flesh was beyond use, oil could be rendered from the blubber. Nuu-chah-nulth chiefs jealously guarded their drift rights to anything that washed up on the beaches of their territories (Arima and Hoover 2011, 64; Drucker 1951, 39). Other outer coast peoples, such as the Salish groups on the Washington coast, also had demarcated territories with exclusive ownership of beached whales (Hajda 1990, 507).

Scavenging of drift whales likely accounts for the large number of whale remains found at many coastal sites, making it difficult to distinguish actual whaling in the archaeological record. Acheson and Wigen (2002) make a case, based on the abundance of whale bones in the pre-contact village sites, that the southern Haida had been whalers (see also Orchard and Szpak, this volume). Again, much of this could stem from extensive use of drift whales, although it is certainly possible that the Haida practised at least occasional opportunistic whaling. However, the sites have yielded no definite whaling equipment such as specialized harpoon heads, and ethnographic studies of the Haida give no indication that whaling featured in rituals or other aspects of their culture.

The occasional capture of a whale when encountered at sea may have occurred all along the coast. Losey and Yang (2007) present compelling evidence that opportunistic whaling took place as far south as the Oregon coast. At the Par-Tee site, south of the Columbia River mouth, a pointed bone artefact was found embedded in a humpback whale phalange dating to about fifteen hundred years ago. DNA analysis of the intrusive

point determined that it was made from elk bone that came from the local region, thus dismissing any idea that the whale carcass had drifted south from the territory of known whaling groups. This provides a good example of probable opportunistic whaling, which may have occurred along the entire outer coast, without the development of specialized whaling gear. As such, it may resemble an early stage in Nuu-chah-nulth whaling, where whale bones are common in archaeological sites much earlier than large toggling harpoon heads or other specialized whaling equipment.

#### THE BARKLEY SOUND SITES

A series of archaeological projects led by the author and Denis St. Claire took place in Barkley Sound over the two decades between 1991 and 2010. Excavated sites extend across Barkley Sound, in the traditional territories of the Toquaht, Tseshahht, and Huu-ay-aht First Nations (Figure 2). This article is based on results from six major village sites. In the western sound, in Toquaht territory, are the large nearby sites of *T'ukw'aa* (DfSj-23) and *Ch'uumat'a* (DfSi-4); a third site, *Ma'acoah* (DfSi-5), had more limited excavation and plays only a minor role here. In the central sound, in Tseshahht territory, is the large outer island village of *Ts'ishaa* (DfSi-16 and 17) and the upper sound community of *Hiikwis* (DfSh-15 and 16). Both *Ts'ishaa* and *Hiikwis* consist of two adjacent archaeological sites with separate ethnographic names. However, as they would have been part of a single large community they have been treated as single sites here. The final site is the large Huu-ay-aht village of *HuuZii* (DfSh-7), in the southeastern sound near the modern community of Bamfield.

All the excavated sites were major villages with recorded ethnographic names, and all except *HuuZii* were occupied into historic times. All have level terraces of midden facing the shoreline where a row of houses once stood, often with a midden ridge at the rear. Well-defined house outlines extend across the main portion of *HuuZii* (McMillan and St. Claire 2012), and wooden remnants of a traditional house, consisting of posts and a collapsed beam, are still evident on the surface at one of the *Hiikwis* sites (DfSh-16). All these village locations occur just above the highest tide line and are clearly associated with modern sea levels. Basal radiocarbon dates in the excavated portions range from about twelve hundred years ago at *T'ukw'aa* (McMillan 1999, 69; McMillan and St. Claire 1992) to about eighteen hundred years at *Ts'ishaa* (McMillan and St. Claire 2005).

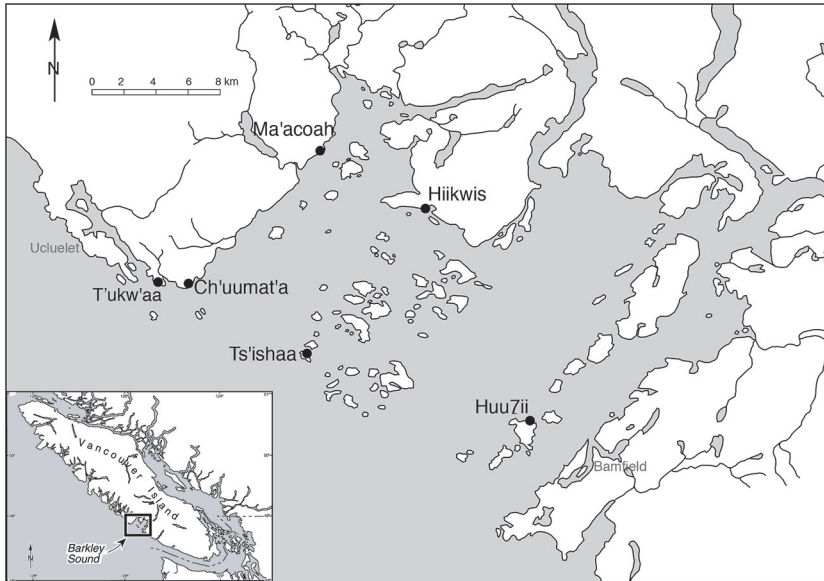


Figure 2. Barkley Sound, showing locations of the excavated village sites discussed in this article.

Evidence of earlier occupations, associated with relative sea levels that were roughly three to four metres higher, came from elevated landforms behind four of these village locations. At one of the *Hiikwis* villages (DfSh-15) the land slopes gradually up into the forest. An excavation unit substantially inland from the later village revealed that initial human occupation occurred about twenty-eight hundred years ago and that this area was abandoned around two thousand years ago as sea levels gradually receded. At *Ch'uumat'a*, *Ts'ishaa*, and *HuuZii*, higher terraces stand immediately behind the later village locations. In all three cases, initial occupation was between forty-five hundred and five thousand years ago, and these areas continued in use until between twenty-five hundred and three thousand years ago (McMillan 1998, 2003; McMillan and St. Claire 1996, 2005, 2012), when dropping sea levels exposed the land upon which the later villages were established. At sites where detailed faunal identifications have been completed (*Ts'ishaa*, *HuuZii*, and *Hiikwis*) whale remains are present throughout the entire archaeological sequence, documenting whale use in Barkley Sound from about five thousand years ago to the historic period (Arndt 2011; Frederick 2012; Frederick and Crockford 2005; Westre 2014).



## WHALE BONES IN ARCHAEOLOGICAL SITES

Numerous cultural and taphonomic factors affect the presence of whale bones at archaeological sites and bias any interpretations based on that data. While many small items such as fish bones, found in great quantities throughout the site deposits, represent dietary refuse from everyday domestic practices (e.g., McKechnie 2013), whale bones are much rarer. Their large size, technological utility, and status association result in their entering the site record for a variety of reasons not directly related to subsistence. As a result, the abundance of whalebone in a site may not accurately reflect the economic importance of whaling.

Ethnographic accounts indicate that, after a successful hunt, the dead whale was towed back to a major village, if possible, and floated up on the beach, where it was butchered (Drucker 1951, 55; Swan 1870, 21). Only the meat and blubber might be carried up into the village, while the bones were simply discarded on the beach (Gunther 1942, 69; Waterman 1920, 46, 47). A kill far from home might have forced the whalers to butcher their catch on a distant beach (Koppert 1930, 58) or even, occasionally, as it floated in the water (Sapir et al. 2004, 246), in which case only choice pieces of meat and blubber might have been brought back to the village, leaving no archaeological trace of the whalers' success.

Whenever possible, a whaler hoped to get the whale to the front of his village, not just for ease of butchering but also to accumulate the bones of his kills as a visual testimony to his whaling prowess (Arima and Hoover 2011, 63; Drucker 1951, 55). Ethnographic accounts tell of prominent Tseshaht whalers who attempted to use the bones of their many kills to fill the pass in front of *Ts'ishaa* (St. Claire 1991, 140; Sapir et al. 2009, 67). Some bones may have been hauled up onto the site for such a display. This may be the case for the whale skulls and vertebrae to the side of House 1 at Ozette and for two stacks of whale bones, from a number of individual animals, at the front of *Ts'ishaa* (McMillan and St. Claire 2005, 68-69).

Whale bones contain considerable quantities of oil. Although not a practice mentioned in the ethnographic literature, some bones may have been carried into the villages to extract the oil. Examples from the Toquaht sites show evidence of gouging, chopping, and charring that are likely attributable to such activities (Monks 2003, 2005). A large number of bones from Ozette similarly show evidence of gouging or cutting, presumably to extract the oil (Huelsbeck 1994, 282).

Perhaps the major reason for whale bones to be in the site deposits is their use as a raw material for artefact manufacture. Artefacts of

whalebone are common in the Barkley Sound sites, along with examples of bones with sections removed for tool manufacture. A cache of whalebone “blanks” on the house floor at *Huu7ii* marks where such tools were being manufactured (McMillan and St. Claire 2012, 53, 82–83). In addition, whale elements were hauled onto the site for use in various architectural features. At Ozette, whale bones served in retaining walls and were used with wooden planks to line trenches for diverting water away from the houses (Huelsbeck 1994, 289). Similarly, whalebone posts appear along a drainage trench in the house floor at *Huu7ii* (McMillan and St. Claire 2012, 83, 86). Whale vertebrae and boulders were placed into a large pit to support a major house post at *Huu7ii* (McMillan and St. Claire 2012, 86), and at *T'ukw'aa*, on the rocky headland that served as a defensive site, a whale scapula had been hauled up to brace a post in the shallow deposits above bedrock (McMillan and St. Claire 1992). Other human needs and actions, unrelated to subsistence activities, doubtlessly also affected the frequency and distribution of whale bones across these village sites.

#### SPECIES BEHAVIOUR, AVAILABILITY, AND ETHNOGRAPHIC IMPORTANCE

Ethnographic accounts strongly feature the California grey whale (*Eschrichtius robustus*) as the primary prey species for Nuu-chah-nulth and Makah whalers (Arima and Hoover 2011, 58; Curtis 1916, 18; Swan 1870, 16; Swanson 1956; Waterman 1920, 42). The whalers most intensively pursued these whales in the spring, during their annual migration north to their summer feeding grounds in the Gulf of Alaska and Bering Sea, when the greys travelled closely along the coasts of the Olympic Peninsula and western Vancouver Island. Most were taken during the period from April to June (Arima and Hoover 2011, 58; Koppert 1930, 56). These seasonally migrating whales were “thought to be running, just like salmon” (Drucker 1951, 48). Frank Williams, one of Edward Sapir’s major Tseshaht collaborators, gave a detailed account of the northward movement of these whales into Barkley Sound (Sapir et al. 2004, 226). After passing the outer Washington coast (which would take them by Ozette and Cape Flattery), the whales crossed to Vancouver Island in Ditidaht territory, then closely followed the coastline and rounded Cape Beale. Once in Barkley Sound, they passed along and between the outer islands, then moved past the Toquaht sites to continue northward. The four major outer coast villages discussed here (*T'ukw'aa*, *Ch'uumat'a*, *Ts'ishaa*, and *Huu7ii*) would have been well situated to intercept these



movements, whereas *Hiikwis* and *Ma'acoah* would have been somewhat more removed. Specific accounts tell of taking these whales immediately offshore from villages such as *Ch'uumat'a* (Sapir et al. 2004, 99-100).

Biologists' observations of grey whales document a migration route across Barkley Sound very similar to that described by Frank Williams (Darling 1984, 270; Pike 1962, 820). Although the spring migration is the prime period for sightings, some grey whales cease their travel at this point and spend the summer on the west coast of Vancouver Island (Darling 1984; Darling, Keogh, and Steeves 1998; Ford 2014, 121; Pike 1962). The same individuals tend to return annually, making this their "home summer range" (Darling, Keogh, and Steeves 1998, 693). Such whales have been sighted over much of the year, from March to December. In addition, occasional observations of grey whales in the area during the winter suggest that a few individuals may be present year-round (Darling 1984, 283; Darling, Keogh, and Steeves 1998, 702). These whales are bottom feeders, frequenting the shallow waters where they scoop up mouthfuls of sediments that they filter through their baleen plates (Ford 2014, 121; Naughton 2012, 629). Small crustaceans were a major food, although Darling, Keogh, and Steeves (1998, 702) also note that "vast quantities of herring eggs" were consumed at particular locations. Nuu-chah-nulth oral narratives tell of hunters taking these whales while they were "standing on their heads" near shore, their tails showing above the water while they scooped molluscs off the bottom (Arima and Hoover 2011, 10; Sapir et al. 2004, 246). Grey whales could be aggressive and dangerous to hunt, hence the "Devilfish" term of the early non-Native commercial whalers (Ford 2014, 124; Naughton 2012, 63; Scammon 1874, 25).

Several researchers have called into question the dominance of grey whales in the ethnographic descriptions. In many accounts the humpback whale (*Megaptera novaeangliae*) plays an equal role with the grey. Whalers generally took both species, with the emphasis differing according to the time of year (Drucker 1951, 48; Sapir 1924; Sapir et al. 2004). Dewhirst (1978, 6), based on archaeological research in Nootka Sound, speculated that the humpback whale was the most common species taken, at least for the more northerly Nuu-chah-nulth. In a broader analysis of this issue, Kool (1982) brought together various ethnographic sources of information to argue persuasively that humpbacks were the primary prey of the Nuu-chah-nulth whalers. In concluding, he called for a major archaeological excavation in a location such as Barkley Sound to test this idea. The research reported here provides strong confirmation that the humpbacks were indeed the major species pursued by Nuu-chah-nulth whalers, at least in this area.

Humpback whales had many attributes that would have made them attractive to Nuu-chah-nulth hunters. They are “one of the slower whales” and are also “rather docile” and “easily approached” (Banfield 1974, 279), compared to the faster and more dangerous grey whales. Also, unlike the greys, which tend to stay along the coastline, the humpbacks frequently enter bays and inlets. The bulk of the humpback diet consists of krill and small schooling fish such as herring and anchovy (Arndt 2011, 32; Banfield 1974, 280; Ford 2014, 176-77; Naughton 2012, 626). These fish seasonally appear in great abundance in Barkley Sound, bringing the whales as far as the inner shores. Humpbacks have a thicker blubber layer than all other whales in these waters except the blue (Winn and Reichley 1985, 248; Wolman 1978, 49), providing much more of the prized oil. These whales were actively feeding in Barkley Sound, unlike the greys that were arriving after lengthy fasting during their migration. Fat, oil-rich, and slow moving, the humpback whale made an ideal target.

Like the California greys, humpbacks migrate from their low-latitude breeding areas north to their summer feeding grounds around the Gulf of Alaska and Bering Sea. They pass by Vancouver Island in May and June (Banfield 1974, 280; Wolman 1978, 51-52), when they are in greatest abundance. Some animals end their northward journey then and stay through the summer (Wolman 1978, 52). Humpback migrations are structured by age and sex, with non-breeding females most likely to remain at such latitudes to feed (Arndt 2011, 82-83; Gregr et al. 2000, 723). Commercial whaling records indicate that humpbacks spent extended periods in Barkley Sound, including through the winter (Gregr et al. 2000, 700, 722). The Sechart Whaling Station, which opened in upper Barkley Sound near *Hiikwis* in 1905, occasionally extended its season to take humpback whales in the sheltered waters near the station during the winter months (Gregr et al. 2000, 724). Evidence for humpbacks present in the waters off Vancouver Island for much of the year led Gregr et al. (2000, 725) to suggest that there was a resident population, a point refuted for earlier times by Arndt (2011, 175) due to the lack of DNA differentiation that would be expected in a genetically isolated group. Even without permanent residents, humpbacks clearly were present in Barkley Sound for much or all of the year.

Ethnographic accounts indicate that humpbacks were primarily hunted during the summer, when the seas were calm and most of the greys had gone (Drucker 1951, 48; Sapir 1924). Sapir (1924; Sapir et al. 2004, 133-35) recorded a story of rival whalers who took both species: grey whales during their spring migration and humpbacks when summer arrived.

On calm summer days, Nuu-chah-nulth whalers ventured far offshore in search of the whales. Upwelling currents on the offshore banks, such as La Perouse off Barkley Sound, brought rich nutrients to the surface, fostering the growth of plankton that supported large schools of fish, in turn attracting the feeding whales and the hunters who pursued them.

The ethnographic accounts also document winter whaling as the humpbacks moved into the upper sound and its inlets to feed on herring. In one account, the Tseshaht had gathered at *Hiikwis*, their winter village in the upper sound: “The Humpbacks now became many . . . the whales entered the canal [Alberni Inlet], going after herrings” (Sapir et al. 2004, 30). Elsewhere, in addition to his description of grey whale movements, Frank Williams provided Sapir with specific details on humpbacks, placing them up Alberni and Effingham inlets during the winter, from at least November to March (Sapir et al. 2004, 226). The whales were so numerous in these inlets that Williams described tapping the canoe thwarts to frighten them away while he was raking for herring. The protected waters and confined space in these inner waterways likely led to a higher rate of whaling success there than on the open sea. Some high-ranking individuals from groups well up Alberni Inlet sought supernatural powers and became great whalers, even though they lacked “outside” territory and were restricted to whaling in the inlet (Sapir et al. 2004, 67–78, 115–31). By late March the humpbacks had moved back out to the islands in Barkley Sound for the arrival of the spawning herring (Sapir et al. 2004, 226).

While not attaining the importance of the humpbacks and greys, other whale species were known to the Nuu-chah-nulth and Makah (Drucker 1951, 49; Swan 1870, 19; Waterman 1920, 42). Drucker’s (1951, 49) informants described a whale similar to the grey, “with something growing on the back of its head.” This likely refers to the right whale (*Eubalaena japonica*), which has a large callosity (or “bonnet”) infested with small crustaceans and barnacles on its head (Banfield 1974, 282; Ford 2014, 103). Right whales are “rather tame” and “easily approached” (Banfield 1974, 282). Like the humpbacks, they are slow swimming and oil-rich (in fact, the body contains so much oil that it does not sink when killed, making it the “right” whale for the early commercial whalers to hunt). They would have been attractive targets for Nuu-chah-nulth hunters and were attacked when sighted, but they apparently were not common (Drucker 1951, 49).

The largest whales off the British Columbia coast were the blue (or “sulphur-bottom”; *Balaenoptera musculus*) and fin (or “finback”;

*Balaenoptera physalus*). The blue whale, the largest animal on earth, was too large, swift, and powerful for the early non-Native commercial whalers to take (Gregg et al. 2000, 703; Rice 1978, 35). Second in size only to the blue, the fin is “one of the fastest of the great whales” (Gamble 1985, 187). Only with such technological innovations as steam-powered vessels firing harpoons with exploding heads did the blue and fin whales become mainstays of the commercial industry. Both species generally favour deep water well offshore (Banfield 1974, 274; Ford 2014, 152, 162; Mitchell 1978, 40). Drucker (1951, 49) maintains that the Nuu-chah-nulth whalers knew of these animals but did not hunt them, considering them “too big to handle.” However, Huelsbeck (1988, 5) cites several historic sources regarding the Makah and Quileute successfully taking fin whales.

Another large whale known to the Nuu-chah-nulth is the sperm whale (*Physeter macrocephalus*), the largest of the toothed cetaceans. These whales are migratory, passing by the BC coast during the summer months (Banfield 1974, 248). They prefer deep water and are most abundant near the edges of continental shelves and offshore banks (Ford 2014, 190; Naughton 2012, 683), although they also travel closer to shore (Whitehead 2003, 36). Drucker (1951, 49) maintains that these whales were not hunted by the Nuu-chah-nulth.<sup>1</sup> They would be dangerous to pursue; Scammon (1874, 78–79) provides accounts of commercial whaling boats being attacked and destroyed. That fact and their offshore location make it unlikely that they played any significant role in Nuu-chah-nulth whaling, although they may have been taken on rare occasions. Swan (1870, 19) notes that they were “very rarely seen.” Sperm whales may have been more prone to stranding than the baleen whales, occasionally with dead and moribund animals washing onto beaches in some numbers (Naughton 2012, 684; Whitehead 2003, 203).

Other whales appearing in British Columbia waters include the sei (*Balaenoptera borealis*) and minke (*Balaenoptera acutorostrata*). The fast-moving sei is pelagic, normally occurring well offshore (Banfield 1974, 275; Ford 2014, 143–45; Naughton 2012, 617). These animals carry relatively little blubber (Naughton 2012, 616), making them less attractive to Nuu-chah-nulth hunters. The minke, the smallest of these whales, is a swift swimmer, with a streamlined body shape. They are common along the BC coast particularly during the summer months (Banfield 1974, 277; Ford 2014, 134), but may have been too fast to pursue in canoes. Neither

<sup>1</sup> Arima and Hoover (2011, 59) state that these whales were hunted. However, they offer no evidence, and the ethnographic name they give is more likely to refer to the right or fin whale (cf., Monks, McMillan, and St. Claire 2001, 71).

of these whales appears in the ethnographic accounts of species known to the Nuu-chah-nulth.

The orca (*Orcinus orca*), or “killer whale,” is actually the largest member of the dolphin family rather than a true whale. Orcas are found all along the BC coast, including the inner waterways, with some groups being year-round residents. These animals were difficult and dangerous to hunt, but occasionally young men took them to demonstrate their bravery and skill (Drucker 1951, 49). The meat and fat were regarded as good tasting, resembling porpoise. Scammon (1874, 92) noted that the Makah occasionally hunted orcas around Cape Flattery and considered their flesh and fat “more luxurious food” than the larger whales. Chief Earl Maquinna George (2003, 54), on the other hand, denied that the orca was targeted. He felt that the animal’s supernatural power, which allowed it to transform into a wolf while on land, removed it from the food quest.

Nuu-chah-nulth hunters may also have avoided orcas due to their observations of orca attacks on the larger whales.<sup>2</sup> Scars from orca encounters are common on most of the whale species known to the Nuu-chah-nulth (Naughton 2012). Scammon (1874, 90) provides a nineteenth-century eyewitness account of an orca attack on a grey whale with calf, in which the latter was killed and devoured. His reference to orcas as “wolves of the ocean” closely corresponds to Nuu-chah-nulth beliefs. In a recent study, Barrett-Lennard et al. (2011) document orca interceptions of grey whale migrations in the northeastern Pacific. Targeting the younger and smaller greys, these orcas subsisted almost exclusively on this food source for an extended period. These observations led the study authors to speculate that orca predation affected grey whale migration patterns, forcing them to travel closely along the shoreline where shallow water offered some protection from orcas. This shift would have brought them within easy reach of the Nuu-chah-nulth whalers. In Nuu-chah-nulth art, occasional depictions of whales with prominent dorsal fins may represent orcas, perhaps visualized (along with thunderbirds) as non-human whalers in the whaling iconography.

The smaller cetaceans, the porpoises and dolphins, were also highly valued food animals, prized for their flesh and oil. They frequent the inshore waters, often appearing in considerable numbers. Various species

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<sup>2</sup> Recent studies demonstrate genetically distinct populations of orcas, with very different patterns of movement and diet. One of these populations, known as “transients,” feeds almost exclusively on other marine mammals, including whales and porpoises. A “resident” population, on the other hand, subsists on fish (Barrett-Lennard et al. 2011; Ford 2014; Ford, Ellis, and Balcom 2000).

occur along the BC coast, with the most common being the harbour porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoena dalli*), and the Pacific white-sided dolphin (*Lagenorhynchus obliquidens*). Native groups all along the Northwest Coast hunted these small cetaceans (Drucker 1965, 19). The Nuu-chah-nulth took these speedy and elusive animals with the same harpoons and other gear used for seals and sea lions (Drucker 1951, 26; Koppert 1930, 67).

#### WHALE SPECIES IDENTIFIED IN NUU-CHAH-NULTH SITES

Prior to the Barkley Sound research, the only substantial archaeological sample of whale remains identified to species was from the Makah site of Ozette, on the outer Washington coast. Great quantities of fragmentary whalebone came from this ancient village, situated along the path of the migrating whales, along with over a thousand artefacts manufactured from whalebone (Huelsbeck 1994, 271). Over thirty-four hundred bones were sufficiently complete to determine the skeletal element, although most (such as ribs and phalanges) were non-diagnostic and could not be assigned to species based on the comparative collection available (Huelsbeck 1988, 4; 1994, 271). The 873 bones that could be identified to species, although they comprise only 25.7 percent of the element total and a very small proportion of the total whalebone present, form a substantial collection that provides insights into cetacean use along this portion of the coast. Grey whales take the lead at 50.5 percent of the identified total, while humpbacks are close behind at 46.5 percent (Huelsbeck 1988, 4; 1994, 271). Other species are minor, consisting only of right whale at 2.3 percent and fin at 0.7 percent. In addition to these totals, three teeth have been tentatively identified as orca and one as sperm whale.

This large number of identified elements provides a comparison for the work reported here. Combining all the archaeological results from Barkley Sound gives a total of 333 whale bones identified to species (Table 1). In general, the same species were found in the two areas, although the Barkley Sound sites contained several additional examples. The major difference, however, lies in the abundance of greys at Ozette, whereas humpbacks markedly predominate in the Barkley Sound sites (Figure 3). This difference may be attributable to different environmental settings. Ozette lies on the outer coast, far from any major bays or inlets. Both greys and humpbacks pass closely by the site on their coastal migrations during the spring and summer. Most animals were likely taken during that time, resulting in near-equal representation of the two whale species in the village deposits. In contrast, the archaeological sites discussed



TABLE 1

*Cetacean elements identified to species by site, Barkley Sound*

SITE	No.	HUMPBACK	GREY	OTHER SPECIES	SOURCE
<i>T'ukw'aa</i> *	43	86.0%	11.6%	2.4%	Monks, McMillan, and St. Claire 2001
<i>Ch'uumat'a</i> *	42	78.6%	14.3%	7.1%	Monks, McMillan, and St. Claire 2001
<i>Ts'ishaa</i>	138	76.1%	13%	10.9%	Arndt 2011
<i>Hiikwis</i>	26	57.7%	34.6%	7.7%	Rodrigues and Yang 2014
<i>HuuZii</i>	84	83.3%	13.1%	3.6%	Arndt 2011, Arndt and Yang 2012
<i>Barkley Sound totals</i>	333	78.1%	14.7%	7.2%	

\*Identifications for *T'ukw'aa* and *Ch'uumat'a* were by visual comparisons with reference collections. All others were through adna analysis.

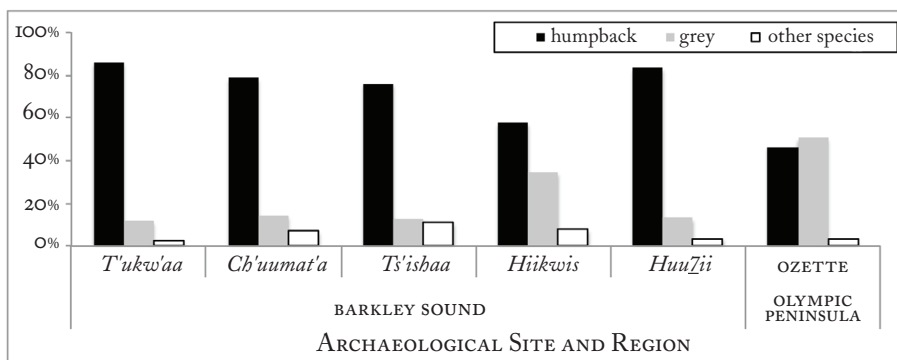


Figure 3. Whale species distributions at Barkley Sound sites compared to Ozette.

here are in a major embayment in which humpback whales may have been available for much or all of the year, in addition to large numbers of greys and humpbacks passing by on their seasonal migrations.

The Barkley Sound projects began with major excavations at the large Toquaht village sites of *T'ukw'aa* and *Ch'uumat'a* (Figure 2). Whale bones were abundant throughout the deposits at both sites. Forty-three examples from *T'ukw'aa* and forty-two from *Ch'uumat'a* were selected as sufficiently complete and diagnostic to allow species identifications (Monks, McMillan, and St. Claire 2001). This analysis, conducted by

Greg Monks, involved visual comparisons with cetacean reference collections at several institutions. Humpbacks were the dominant species at both sites, comprising 86 percent of the total at *T'ukw'aa* and 78.6 percent at *Ch'uumat'a* (Table 1). Greys followed distantly at 11.6 and 14.3 percent, respectively, while only a few specimens represented other species.

Subsequent excavations in Barkley Sound relied on ancient DNA analysis to determine whale species present in the assemblages. As this technique requires only small samples, previously unidentifiable bone fragments could be analyzed, which greatly increased the possibilities in selecting samples. For this research, cetacean remains were selected to cover different site areas and time periods. To minimize the problem of several samples representing the same animal, these were deliberately chosen from spatially and temporally dispersed contexts. As a minimum requirement, no two samples could come from the same excavation unit and stratum.

The large outer coast sites of *Ts'ishaa* and *HuuZii* yielded abundant whalebone, from which 264 samples were selected. Ursula Arndt, working in Dongya Yang's laboratory at Simon Fraser University, conducted this analysis (Arndt 2011). Of the initial samples, 138 from *Ts'ishaa* and eighty-four from *HuuZii* yielded amplifiable DNA, allowing species identification. Once again, humpbacks dominate the identified elements, at 76.1 percent for *Ts'ishaa* and 83.3 percent for *HuuZii* (Table 1, Figure 3; Arndt 2011). Greys again are a distant second at 13 percent in both sites. These identifications are very similar to those from the two Toquaht sites, even though very different identification processes were followed.

At *Hiikwis*, in the upper sound, whale bones were much less abundant despite similar excavated volumes. Samples were sent to Antonia Rodrigues, who also worked in Dongya Yang's laboratory, for analysis. From an initial group of thirty-four samples, thirty-one yielded amplifiable DNA (Rodrigues and Yang 2014). Removed from this total were three samples that tested as non-cetacean marine mammals and two that were set aside as the contexts were too close to discount the same animal being tested, leaving twenty-six whale species determinations. Despite being in an upper sound location, somewhat removed from the known grey whale migration route and in an area known ethnographically for taking humpbacks, humpbacks had the lowest percentage (57.7) of all the examined sites, although still forming a majority. Grey whales accounted for 34.6 percent of the total, while two sperm whale elements formed 7.7 percent (Table 1).

Although humpbacks and greys together comprise most of the whale assemblages, an additional six whale species were identified from the Barkley Sound sites (Table 2). Fin whales, from *Ts'ishaa* and *HuuZii*, were the most abundant, followed by right whales. The latter is the only species to be recovered from all four “outside” villages, although the number from each is small. Two blue whale elements were identified at *Ts'ishaa* while two sperm whale bones came from *Hiikwis*. At both sites, the two samples were from contexts widely dispersed in space and from different time periods, making it highly likely that two individual animals were present in each case. Minke whales and orcas were minor species, with only one bone from each identified (Table 2).

Humpback and grey whales were found in all time periods, covering the last five thousand years, whereas other species appear only in the last two thousand years (Table 3). Most of the identified bones date to the last millennium, although this clearly stems from a larger volume of excavated deposits, hence a greater number of analyzed samples. Humpbacks form a substantial majority of the identified whalebone from all time periods, while greys decline in relative importance over time (Table 3, Figure 4). An increase in humpbacks during the final millennium may reflect a more targeted hunt with full development of the whaling technology, as is discussed later in this article.

A recent study of genetic diversity in grey whales (Alter, Newsome, and Palumbi 2012) provides additional information through ancient DNA analysis on cetacean species present in the Makah area. As part of that study, twenty-five samples from Ozette were analyzed, of which twenty-three provided species results. Greys were the most numerous at fourteen (60.9 percent), followed by humpbacks at eight (34.8 percent), plus a single element of blue whale (4.3 percent).<sup>3</sup> These results are similar to the earlier and much larger study of Ozette whale bones, while adding blue whale to the species present. In addition, seven aDNA tests were run on whalebone from four raised shoreline sites near the tip of the Olympic Peninsula (see Wessen and Huelsbeck, this volume). These locations were occupied at a time of higher relative sea levels and have a series of radiocarbon dates spanning about sixteen hundred to four thousand years ago. Of the seven results, humpbacks form the majority with four, while greys are restricted to a single example. One blue and one sperm

<sup>3</sup> These results do not appear in the published article, which is restricted to grey whales. They came from a project printout provided by Gary Wessen, who arranged for use of these samples in the Alter, Newsome, and Palumbi study.

TABLE 2

*Minor cetacean species identified (not humpback or grey)*

SPECIES	No.	SITES
Fin ( <i>Balaenoptera physalus</i> )	11	<i>Ts'ishaa</i> (9) <i>HuuZii</i> (2)
Right ( <i>Eubalaena japonica</i> )	7	<i>Ts'ishaa</i> (3) <i>HuuZii</i> (1) <i>T'ukw'aa</i> (1) <i>Ch'uumat'a</i> (2)
Blue ( <i>Balaenoptera musculus</i> )	2	<i>Ts'ishaa</i>
Sperm ( <i>Physeter macrocephalus</i> )	2	<i>Hiikwis</i>
Minke ( <i>Balaenoptera acutorostrata</i> )	1	<i>Ch'uumat'a</i>
Orca or "killer whale" ( <i>Orcinus orca</i> )*	1	<i>Ts'ishaa</i>

\*Although it is actually the largest member of the dolphin family, the orca, or "killer whale," is commonly classed with the whales.

TABLE 3

*Whale species identified by time period (aDNA identifications only)\* \*\**

TIME PERIOD	HUMPBACK NO. / %	GREY NO. / %	OTHER NO. / %	TOTAL
0 to 1000 BP	123 / 84.2	14 / 9.6	9 / 6.2	146
1000 to 2000 BP	38 / 65.5	11 / 19.0	9 / 15.5	58
2000 to 3500 BP	8 / 61.5	5 / 38.5	-	13
3500 to 5000 BP	18 / 69.2	8 / 30.8	-	26

\* 0 to 1000 BP from *Ts'ishaa* main village, *Hiikwis*, and *HuuZii* (House 1 deposits); 1000 to 2000 BP from *Ts'ishaa* main village, *Hiikwis*, and *HuuZii* (sub-floor midden); 2000 to 3500 BP from elevated landforms behind *Ts'ishaa* and *Hiikwis* villages (*HuuZii* back terrace materials not analyzed); 3500 to 5000 BP from *Ts'ishaa* back terrace only.

\*\* Five identified elements (3 humpback, 2 fin) from the *Ts'ishaa* main village could only be placed within the last two thousand years. They have been omitted from this table.

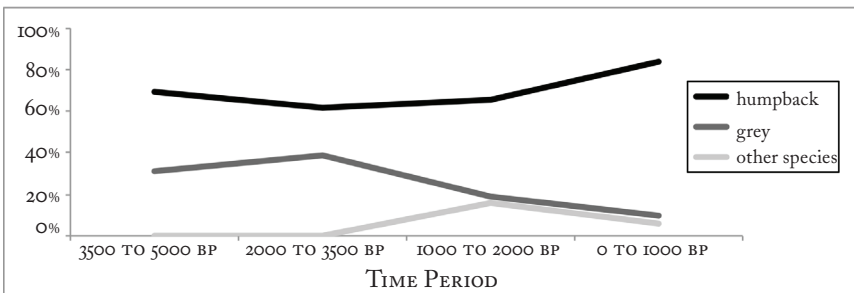


Figure 4. Graph showing change over time in whale species hunted based on excavated sites in Barkley Sound.

whale account for the remaining two, confirming human use of these large animals on the Olympic Peninsula even in relatively early times.

Whale barnacles provide another, although more indirect, insight into human use of whales at ancient village sites. These barnacles, which are unique to particular cetacean species, would have been carried up onto the site deposits on whale skin, perhaps during the transport of blubber strips. In the absence of bone, they provide the only evidence for this activity in the village areas. *Coronula reginae*, a barnacle species associated with humpback whales, has been identified in Nuu-chah-nulth sites further north along Vancouver Island, such as Yuquot and Hesquiat Village (Fournier and Dewhurst 1980; Monks, McMillan, and St. Claire 2001, 74). In the Barkley Sound assemblages, *Coronula reginae* (and a similar species, *C. diadema*) has been identified, although only in very small numbers, from *T'ukw'aa* and *Ch'uumat'a* (G. Monks, personal communication, 2014). The barnacle associated with grey whales, *Cryptolepas rachianecti*, has not been identified from any of the Nuu-chah-nulth sites discussed. At Ozette, however, both *Cryptolepas rachianecti* and the two species of *Coronula* (*reginae* and *diadema*) were found in some abundance, confirming that both grey and humpback whales were important at this site (Wessen 1994, 355-56).

Brief mention should also be made of the smaller cetaceans. At *Ts'ishaa* and *HuuZii*, where extensive faunal analyses have been completed, the three locally common species (harbour porpoise, Dall's porpoise, and Pacific white-sided dolphin) have all been identified. Further, they make up a substantial portion of the total number of identified marine mammal elements: 14.3 percent at *Ts'ishaa* (Frederick and Crockford 2005, 117) and 28.2 percent at *HuuZii* (Frederick 2012, 122-23). Additionally, they were found in all time periods at these sites, including the three thousand to five thousand year back terrace deposits. Even at this early time, all three species were identified at *HuuZii* (Frederick 2012, 132). At *T'ukw'aa*, the two species of porpoise were found in considerable numbers, comprising 9.2 percent of the marine mammal total (Monks 2011, 144-45). In summary, these small cetaceans were taken in considerable numbers throughout the five-thousand-year period represented by these sites. Nuu-chah-nulth expertise in harpooning these speedy animals may have contributed to the development of technology for pursuing the large whales.

## ANTIQUITY OF WHALING

Whale bones are abundant from all time periods represented in the Barkley Sound sites. They form a substantial and remarkably consistent percentage of the total marine mammal bone from four sites with completed faunal analyses, despite covering different time spans and environmental settings (Table 4). They are particularly abundant in the 3000 to 5000 BP back terrace deposits at *Ts'ishaa*. In total, cetacean bone specimens comprise 76 percent of all marine mammal bone in that time period, with whales accounting for 53 percent and dolphin/porpoise 23 percent (Frederick and Crockford 2005). Such figures, however, have to be treated with caution as some bone fragments may belong to the same element. For the site as a whole, the presence of house floors in the later deposits may account for the lower percentage of whale bones in the overall marine mammal totals.

Clear evidence of active whaling, however, does not appear until much later, largely in the last millennium. The late-period waterlogged house floor deposits at Ozette provided an impressive array of whaling implements, along with whaling imagery on numerous household items. Wooden harpoon shafts, along with their lines, were found in some quantity, and complete harpoon heads with their mussel-shell blades were recovered in their protective cedar bark sheaths (Huelsbeck 1994, 280). In the absence of such exceptional preservation, the main evidence for whaling gear consists of the large valves for harpoon heads, generally manufactured of whalebone.

Ethnographic whaling equipment included harpoon heads that were often incised with images associated with whaling, such as thunderbirds or lightning serpents (Sapir et al. 2004, 24). The two valves were typically of slightly different sizes, conceived of as a male and female pair (Drucker 1951, 28), reflecting the complementary roles of the whaler and his wife in whaling rituals. The incised designs imparted what Drucker (1951, 28) termed “magical virtue” to the harpoon. Such equipment, imbued with supernatural power, was seen to have agency in its own right in the quest for whales.<sup>4</sup>

However, large harpoon valves are rare in the archaeological record and examples with incised designs are even more so. The six sites reported here had a total of thirty-seven valves with slotted heads to hold a wide cutting blade that were large enough to have been used for

<sup>4</sup> More broadly, certain items of the food quest used by Indigenous peoples along the Pacific coast can be seen as “animate objects” that functioned in a web of interdependence linking humans, animals, and technology (Losey 2010; Whitridge 2004).



TABLE 4

*Analyzed whalebone: Counts and percentage of total marine mammal bone*

SITE	NISP	% NISP	REFERENCE
<i>T'ukw'aa</i>	315*	28.4	Monks 2011
<i>Ma'acoah</i>	126	23.6	Monks 2011
<i>Ts'ishaa</i>	254	29.1	Frederick and Crockford 2005
<i>HuuZii</i>	505	29.8	Frederick 2012

\* This number is incorrectly given as 315 in Table 9.5, Monks 2011

marine mammals. Over half this total (nineteen examples) came from the floor of the largest house evident at *HuuZii* (Figure 5). This very large structure was almost certainly the residence of the village chief, presumably an active whaler. Valves occurred in some numbers across the excavated portion of the floor, while no valves were found in the below-floor midden or in the elevated earlier component. Only small numbers were recovered from the other excavated sites, indicating that such important elements of chiefly whaling gear were not casually discarded. None had a clear incised image, although a large valve with a punctate zigzag design representing the lightning serpent came from a surface cache (DgSh-9) in upper Barkley Sound (Figure 7c; McMillan 1999, 133; McMillan and St. Claire 1991, 68). Similarly, the large assemblage from Yuquot in Nootka Sound includes only one definite whaling harpoon valve, incised with a zigzag design, from the same time period as the Barkley Sound examples (Dewhurst 1980, 301; McMillan 1999, 133; 2000, 238).

Other direct evidence for active whaling includes whale bones with embedded mussel-shell tips from harpoon cutting blades or the scars from such impacts. At Ozette, bones with thin lines of mussel shell, primarily scapulae and vertebrae, clearly show that these whales had been harpooned (Fisken 1994, 366-67; Huelsbeck 1994, 280-81). A whale scapula from *T'ukw'aa* holds the broken tip of a mussel-shell blade, while several other bones from that site exhibit the distinctive impact scars (Monks, McMillan, and St. Claire 2001). At *Ts'ishaa*, a stack of whale bones at the front of the village included a humpback whale skull with much of the mussel-shell blade from a harpoon head embedded in the occipital region (Figure 6; McMillan and St. Claire 2005, 62, 69). Clearly this whale had been hunted, was likely butchered on the beach, and at some later time various skeletal elements were stacked near the



Figure 5. Large slotted harpoon valves, of the type used ethnographically to take marine mammals, from the house floor at *HuuZii* (top, dorsal surfaces; bottom, ventral surfaces).

front of the village with bones from several other whales. Radiocarbon dates suggest that this occurred about five hundred years ago.

More indirect evidence for ancient whaling comes from whaling imagery on various objects. Such imagery was common on household items at Ozette. Without preservation of wood, however, only a few bone and stone artefacts cast light on the pre-contact importance of whales. The “whale’s tail” motif appears on a cut-out bone object from *T’ukw’aa* and as a tiny sculpture at *HuuZii* (Figure 7a, b). A finely carved small stone sculpture of a whale also came from *T’ukw’aa* (Figure 7d). Perhaps the most intriguing of these small art pieces is a bone pendant



Figure 6. Part of a whalebone concentration at *Ty'ishaa* (top, a grey whale mandible lies across a humpback skull, with the partial mandible of a larger humpback above; bottom, the base of the humpback skull with much of a mussel-shell harpoon blade embedded in the bone).



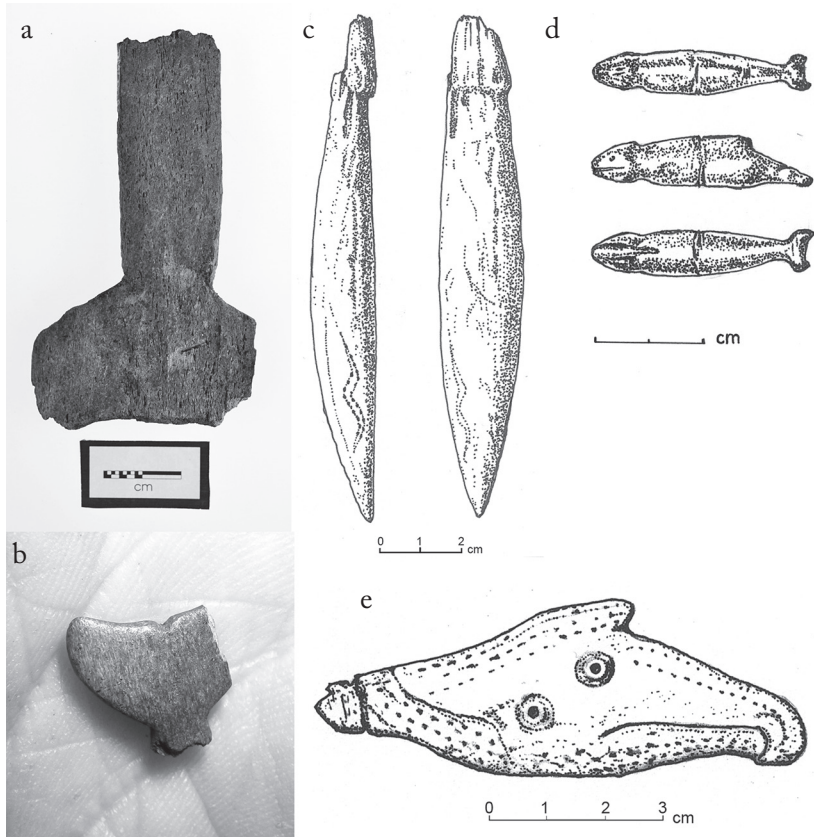


Figure 7. Whaling imagery on archaeological objects from Barkley Sound (a, bone “whale’s-tail” figure from *T’ukw’aa*; b, small bone “whale’s tail” image from *HuuZii*; c, whalebone harpoon valve with incised design representing the lightning serpent from a surface cache; d, small stone sculpture of a whale from *T’ukw’aa*; e, bone pendant with whale and thunderbird imagery from *HuuZii*. The thunderbird’s head with its downturned beak extends to the right. The whale’s snout, with an incised mouth line, is to the left, while its dorsal fin doubles as the crest on the thunderbird’s head).

from *HuuZii* that uses “visual punning” in its depiction of thunderbird and whale, the primary figures in whaling iconography (McMillan and St. Claire 2012, 49). The whale’s head, with an incised mouth line, faces in one direction, while the thunderbird’s head, with its characteristic heavy downturned beak, faces the other (Figure 7e). The downturned beak doubles as the whale’s tail and the whale’s dorsal fin serves as the crest on the thunderbird’s head.

All this evidence – the large harpoon valves, the whale bones with evidence of harpoon strikes, and the artefacts with whaling images – came from contexts dating to within the last twelve hundred years.

Similarly, Dewhirst (1978, 1980) uses the evidence from Yuquot to argue that whaling technology did not fully develop until the same late time period. However, the numerous whale bones at the Barkley Sound sites, along with their relatively consistent occurrence throughout the five-thousand-year archaeological record, suggest much more lengthy and sustained interactions between humans and whales. The lack of any discernible break in the archaeological record suggests a long history of whale use, possibly with a gradual shift in emphasis between exploiting drift whales, opportunistic whaling, and the eventual development of the whaling technology known historically.

## DISCUSSION

At various locations around the North Pacific, human use of whales can be documented over millennia, but the advent of active whaling is more difficult to discern from archaeological evidence (Savelle and Kishigami 2013; Whitridge 1999). The Inuit and Yupik peoples around the Bering and Chukchi seas have a lengthy history of whale use. Whale bones are common in archaeological deposits, including elements used in architectural construction. The use of stranded or drift animals may be sufficient to account for this, although sporadic hunting is also likely. The intensification of whaling practices, with development of specialized harpoon and float technology, appears to have occurred later, during the latter half of the first millennium AD (Harritt 1995; Lowenstein 1993; Mason 1998; Whitridge 1999, 2004). This gradual shift over time appears to parallel the Barkley Sound evidence, as does the development of various ritual practices (such as the active role of the whaler's wife) and iconography (the "whale's tail" motif).

Beached whales undoubtedly contributed to the abundance of whale bones at sites all along the Northwest Coast. Occasional opportunistic whaling, using non-specialized technology, also likely occurred along the entire coast, as shown at the Par-Tee site in Oregon as early as about fifteen hundred years ago (Losey and Yang 2007). A deeply incised line across a humpback scapula from *Ch'uumat'a*, dating to between twenty-five hundred and three thousand years ago, may be the earliest evidence from Barkley Sound for a harpoon strike, although other explanations are possible (Monks, McMillan, and St. Claire 2001). Although the specialized gear known historically, recognized archaeologically primarily by the large slotted valves from harpoon heads, can be traced back only about twelve hundred years, in earlier times hunters may have employed other types of whaling gear. Bone unilaterally and

bilaterally barbed harpoon heads, some very large, have been found in several Barkley Sound sites, as well as at Yuquot (Dewhirst 1980). Drucker's (1951, 27) description of an "ancient" type of harpoon for taking seals and other sea mammals as having a barbed bone head is interesting in this regard as it suggests some evolution in the technology.

Problems arise in attempting to date the advent of specialized whaling practices through the appearance of large harpoon valves. Even in late pre-contact and early historic contexts, when whaling definitely occurred, these artefacts are rare. Whaling chiefs treated their equipment with respect, carefully storing the harpoon heads in protective covers, as was shown in the waterlogged house remains at Ozette. Such valued items would not normally be discarded in an archaeological deposit. Also, as only high-ranking chiefs were entitled to use such implements, only small numbers of valves were required at each village. Sampling bias may also play a role as the earlier deposits received significantly less archaeological attention than the later villages. Instead, the abundant whale bones at these sites may offer the clearest evidence regarding the nature of whale acquisition over time.

In Barkley Sound, whale bones are found throughout the five thousand years of excavated deposits. At Little Beach, on the western edge of the sound near Ucluelet, the placement of whale bones as part of burial cairns suggests that the importance of whales extended into the symbolic realm as early as three thousand to four thousand years ago (Stryd et al. 1991). No break in the relative frequency of whale elements at the excavated sites is evident to mark the advent of active whaling. Throughout this lengthy record, whaling chiefs appear to have targeted humpback whales. Although this species was one of the most common in the area, its strong dominance in the identified samples of all ages suggests that it was specifically sought by whalers with knowledge of its habits and the timing of its availability.

Even with active whaling, many of the bones in the sites doubtlessly came from beached or drifting animals. While some Nuu-chah-nulth chiefs went out to sea with their harpoons, others instead conducted rituals to cause the whales to drift ashore on their territories (Drucker 1951, 173). These activities are linked, however, as many of the drift whales that washed up on beaches may have been animals struck during whaling that subsequently died of their wounds. An eyewitness record of whaling activities at Nootka Sound between 1803 and 1805 (Jewitt 1988) indicates that whales struck and lost greatly outnumbered those taken, thus considerably increasing the likelihood of whales dying and drifting ashore. Whether directly or indirectly, active whaling likely played a



role as natural mortality alone does not seem adequate to account for the considerable accumulations of whale bones in these sites. Further, reliance on naturally beached whales would likely result in a wider pattern of whale species in the deposits rather than the strong focus on one or two species, which suggests an active targeted hunt.

Both ethnographic accounts and the archaeological evidence reported here clearly identify humpback and grey whales as the primary targets of the Nuu-chah-nulth whalers. The strong dominance of humpbacks over greys in Barkley Sound, in contrast to Ozette, can be attributed to their availability for much or all of the year rather than just during seasonal migrations. Whalers would have pursued these animals along the outer shores during summer and in the sheltered inlets during the winter, in the latter case allowing some chiefs with no “outside” territory to become renowned whalers.

Right whales would also have been very desirable targets but appear to have been rare in these waters. Although the very limited mention of right whales in the ethnographic accounts has been attributed to the historic reduction of their numbers through commercial overhunting (Arima and Hoover 2011, 59), archaeological evidence shows that these whales were uncommon even prior to the era of industrial non-Native whaling. Blue, sperm, and fin whales were likely too large and powerful, and minke whales too fast, for hunters in canoes using harpoons. Their infrequent presence in the archaeological sites can be attributed primarily to use of beached carcasses. However, daring whalers very likely took large whales on rare occasions when they had the opportunity. Fin whales, the most common of the minor species identified here, are particularly likely to have been the occasional targets of Nuu-chah-nulth whalers. They are present only in the more recent deposits, presumably following the full development of the whaling technology.

Competition for status among chiefs was likely the driving force behind the development of whaling practices and technology. Although a successful hunt was a major economic windfall (e.g., Huelsbeck 1988), the primary motivation may have been the enhancement of the whaling chief’s prestige through the public distribution of meat and blubber. Drucker (1951, 49) noted regional differences in the pursuit of whales, with certain groups being recognized as “the foremost whalers along the coast.” As whales were available to most Nuu-chah-nulth groups, this likely reflects the ambition of particular chiefs and would likely have shifted between villages over time.

Some chiefs undertook arduous ritual preparations and the dangers of the hunt, whereas others chose to specialize in rituals that brought

in whales to their beaches. Supernatural assistance was sought for both whaling practices. Details of the rituals, and the prayers that went with them, were carefully guarded family secrets (Drucker 1951, 173). The late evolution of the full “whaling package” involved not only the specialized equipment known historically but also the associated rituals and supernatural powers. The pattern of whale remains and the whaling technology revealed through archaeology reflect the knowledge, choices, and actions of individual whalers and their communities in the past.

#### ACKNOWLEDGMENTS

I am grateful to the Tseshaht, Toquaht, and Huu-ay-aht First Nations for their support and involvement in the various research projects summarized here. Denis St. Claire co-directed the fieldwork and contributed in many ways throughout our lengthy research collaboration. Greg Monks, Gay Frederick, Susan Crockford, and Iain McKechnie conducted various aspects of the faunal analyses. I thank Dongya Yang, Ursula Arndt, and Antonia Rodrigues for their excellent work with the aDNA analyses. Our capable field supervisors and crews, although too numerous to name individually, deserve credit for their roles in the recovery of this data. Patrick Amos kindly allowed use of his print design as Figure 1. Iain McKechnie offered valuable comments on faunal analysis and prepared Figures 3 and 4. Gary Wessen provided unpublished information on cetacean aDNA research in Makah territory. Two anonymous reviewers also provided useful comments. An earlier version of this article was presented to the 2013 conference of the Canadian Archaeological Association in Whistler, British Columbia.

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