

AN ETHNOZOOARCHAEOLOGICAL STUDY OF LAND OTTERS AND PEOPLE AT KIT'N'KABOODLE (49-DIX-46), DALL ISLAND, ALASKA

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INTRODUCTION

A MEMBER OF THE WEASEL FAMILY, the North American river otter (*Lontra canadensis*) is known as “land otter” in southeast Alaska, translated from the Tlingit language, *kóoshdaa* (Edwards 2009, 152). In vernacular usage and in primary ethnographic sources (e.g., Emmons 1991; Krause 1979; de Laguna 1972; Swanton 1909), “land otter” has unique characteristics and occurs frequently in oral literature and stories. It is more than an “animal” in the western sense; as de Laguna (1972, 823-26) describes, in the Tlingit moral universe all animals had souls and were once human beings. Jonaitis (1986, 90) states that the Tlingit view the land otter as the “single most powerful supernatural in their universe.” One way the land otter wields its power is to transform into a person (typically “Land Otter Man,” *Kóoshdaa kaa*) and back again. Some land otters were transformed persons who had been lost in boating accidents, drowned, and then captured and transformed (de Laguna 1972, 744-45). While land otters were deeply feared and respected by laypeople, they were sought out by Tlingit shamans. Traditionally, the land otter was the shaman’s most potent spirit helper, or *yéik*. This animal has captured the imagination of many people, has been fodder for contemporary novelists and bloggers, and one can easily find popularized and corrupted versions of ancient Tlingit stories on the internet and in bookstores.

This article is not primarily about *Kóoshdaa kaa*, however; instead, it addresses the behaviour of *Lontra canadensis*, as decipherable from remains at Kit'n'Kaboodle (49-DIX-46), an archaeological site on the west side of Dall Island in southeast Alaska. As I describe, this place was inhabited both by people and land otters at various times in the ancient and recent past, spanning more than fifty-five hundred years. Relying predominantly on zooarchaeological data, I present evidence for the

human occupation of the site at various times during the spring and/or summer seasons over thousands of years. Based on field observations, wildlife studies, and the analysis of dense lenses of tiny fish bones, the site was occasionally occupied by land otters. Herein I describe how faunal remains deposited by people were distinguished from those deposited by land otters. I propose that what is revealed at Kit'n'Kaboodle helps explain why Tlingit have had such a special, long-term cultural relationship with land otters.

As I show, land otters lived (and live) in some of the same places people did. Coastal land otters forage predominantly on marine prey from the intertidal zone and subtidal waters (Roe et al. 2010). They are sometimes social animals that occur in sizeable groups; at other times a mother and her kits forage as a unit and single adult otters forage on their own (Ben-David, Bowyer, and Faro 2005). The name “land otter” is apt because they are well adapted to walking (and running) on land and they sleep in dens on land. In contrast, sea otters (*Enhydra lutris*) have enlarged flipper-like hind paws and are clumsy on land; they forage, sleep, mate, and give birth in the water.

As de Laguna (1972, 744) writes, “everyone, myself included, has had some personal experience of a sudden or startling encounter with a land otter,” and this is true of myself as well. While conducting archaeological survey, I came upon a rocky headland on which otter activity had removed a significant amount of undergrowth from around tree roots. Sometime later I heard human-like voices – then eight to ten upright land otter heads emerged in the waters just offshore, initially striking me as eerily human. Because land otters swim fast and can hold their breath for long periods, they often seem to appear out of nowhere. Then I realized that I had scared these land otters away from one of their haunts. Many Tlingit stories recount persons who were captured by land otters or even married them. De Laguna’s (1972) informants stated that traditionally these animals were not hunted nor was their flesh eaten by laypeople. The fur trade in the nineteenth and twentieth centuries led to land otter hunting (Emmons 1991), but this was not considered a traditional activity. De Laguna explained that, if people had land otter fur or any other by-product on their person, they were vulnerable to being captured by a Land Otter. As I discuss, people and land otters shared certain behaviours and preferences, which lends context to Tlingit ideas about the capacity of land otters to transform into persons and vice versa.

Given that other archaeological sites located on the outer Northwest Coast, especially caves and rockshelters, have also been used intermittently by both humans and non-human animals, discrimination between

natural and cultural vertebrate assemblages should be a priority in the investigation of such sites. Other caves and rockshelters likely have attracted animal activity when humans were not present. The faunal remains accumulated in the temporary absence of people provide another window into local ecology, and they allow us to better appreciate the resource choices people made and to infer the technologies they used to acquire animals used for food, skins, and other products. The differences between the vertebrate assemblages also provide a more complete portrait of the ecological relationships between humans and non-human animals.

THE OUTER PRINCE OF WALES ARCHIPELAGO

The cool rainforests, glacially carved fjords, and convoluted archipelagoes of the northern Northwest Coast have been home to sea-going peoples for at least eleven thousand years. For more than twenty years, research in southeast Alaska has documented an extensive karst limestone landscape riddled with hundreds of caves (e.g., Baichtal and Swanston 1996; Dixon et al. 1997; Heaton 2007; Heaton and Grady 2003; Moss 2004, 2007, 2008; Moss and Erlandson 2001). These caves, located primarily within the Tongass National Forest and protected by federal law, are unusual ecosystems that contain a wealth of biological, paleontological, and archaeological resources. Since 1993, the Tongass National Forest has sponsored interdisciplinary research to document the caves and the fragile resources they contain. Much of this effort has taken place along the outer coasts of the Prince of Wales Archipelago, where human use of the exposed shorelines is limited by frequent storms and high surf. This setting provides an opportunity to study how and when people used such outer coast areas, how such patterns varied over time in response to environmental and cultural changes, and how settlement and resource use varied from that of more protected parts of the Alexander Archipelago (Moss 2012). Because caves and rockshelters provide good conditions for the preservation of organic remains, they sometimes contain artefacts of wood or fibre (e.g., Moss and Erlandson 2000) and well preserved floral and faunal remains (Lepofsky, Moss, and Lyons 2001; McMahan 1985; Moss 2004). At Kit'n'Kaboodle (49-DIX-46), investigations have focused on understanding the chronology of site use, the physical development of the cave and its effect on human occupation, the nature of local environments of the middle and late Holocene, and human and non-human activities evidenced in the site deposits (Moss and Erlandson 2010).

Kit'n'Kaboodle (49-DIX-46) is located on western Dall Island in the Prince of Wales Archipelago (Figure 1). The archaeological site is

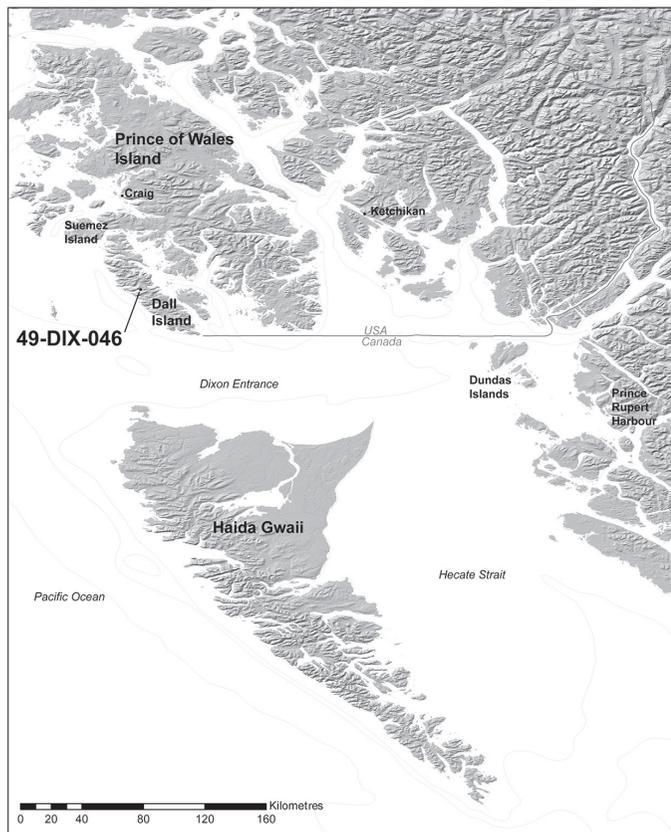


Figure 1. Location of Kit'n'Kaboodle Cave (49-DIX-46) at the head of Gold Harbor, Dall Island, southeast Alaska.

within a complex solution cave system formed in limestone bedrock, with multiple entrances, levels, and passages. Archaeological remains occur in various areas in the cave but also in an adjacent rockshelter to the north (Figure 2). Test excavations and radiocarbon dating have shown that the rockshelter was occupied between 5700 and 2400 cal BP, that the north cave entrance has traces of use dated to 5540–5280 cal BP, and that the main chamber of the cave was occupied between 2600 and 1500 cal BP (Moss and Erlandson 2010). That different areas of the cave complex were occupied during different time periods is likely a consequence of the geomorphological evolution of the cave itself. During the middle Holocene, the main chamber of the cave may have been too wet to be habitable (see below), hence people lived in the better drained rockshelter. During the late Holocene, people were able to live in the main chamber of the cave, and they used shell midden debris to divert surface water away from their primary living area. In the rockshelter, two strata

contain dense lenses of tiny fish bones and other faunal remains that I infer were accumulated by land otters, for reasons described below. These deposits and the vertebrate remains are discussed here to enable other investigators to distinguish land otter deposits from cultural deposits (Erlandson and Moss 2001; Moss 2004). Elsewhere on the Northwest Coast, land otters have undoubtedly created other accumulations of fish bones and shell debris interdigitated with cultural remains.

KIT'N'KABOODLE SITE BACKGROUND

Located at the head of Gold Harbor, Kit'n'Kaboodle was discovered and test-excavated by a US Forest Service team in 1992 (Carlson 1993). Gold Harbor is a deeply indented bay sheltered from heavy storms and surf that routinely batter the outer coast of Dall Island. Around Gold Harbor, the mountainous terrain of Dall Island rises rapidly to snow-covered peaks as much as 730 metres high. Sitka black-tailed deer, black bear, and wolf use habitats ranging from the intertidal zone to the spruce-hemlock rainforest to the alpine tundra at higher elevations. Along the semi-protected rocky shoreline of Gold Harbor, intertidal shellfish beds of mussels, barnacles, chitons, and other rocky coast species are exposed daily. During lower tides, small pocket beaches of sand and gravel are exposed, providing some access to burrowing clams and cockles. Gold Harbor lacks any substantial surface streams that could have supported salmon runs, but bay waters provided productive habitat for marine fish.

Kit'n'Kaboodle Cave is a complex solution cave formed by the dissolution of limestone bedrock by acidic groundwater. The cave now sits about ten metres above the intertidal zone and has at least four entrances, three of which contain evidence of human occupation (Figure 2; Carlson 1993). A small rockshelter located just north of the cave also contains cultural material. A substantial resurgence, where groundwater emerges from the depths of the earth, flows through the lower levels of the cave; the water level and cave habitability would have been affected by relative sea level (higher during the mid-Holocene). A source of high-quality red ochre (hematite), commonly used for decorative and medicinal purposes, is located in intertidal fissures below the site (Erlandson, Robertson, and Descantes 1999), although no ochre has been found in cultural deposits. A combination of shelter, fresh water, shellfish beds, fishing grounds, and deer habitat repeatedly attracted people to 49-DIX-46 over a four-thousand-year period. Nonetheless, the remote location and the difficulty of navigating the often rough and unpredictable outer coast waters of western Dall Island seem to have limited human use of the Gold

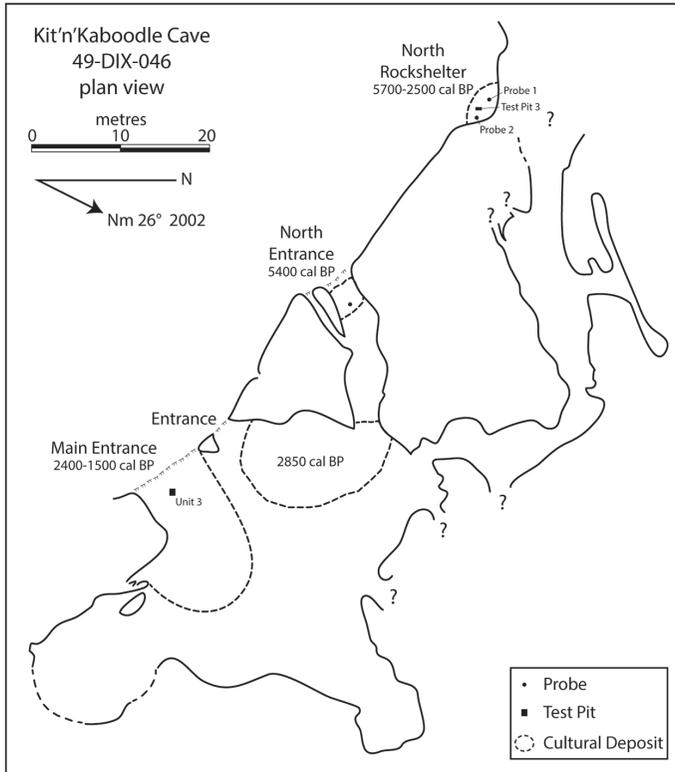


Figure 2. Layout of Kit'n'Kaboodle Cave and the north rockshelter, 49-DIX-46, showing location of archaeological deposits.

Harbor area to relatively short-term, temporary occupations, although archaeological survey of this area has been extremely limited.

During three field trips (1994, 1996, 1998), eleven bulk samples were collected from the site. The shellfish assemblage recovered in these samples was distinctive: large acorn barnacles (*Semibalanus cariosus*) were unusually abundant over a thirty-five-hundred-year period, but, later in time, they were replaced by mussels (*Mytilus*) as the primary taxon targeted by site residents (Moss and Erlandson 2010). Vertebrate remains were recovered from these and other samples taken from the site.

Here I report the results of the vertebrate analysis of cultural and non-cultural samples from Test Pit 3 in north rockshelter and from samples from main cave entrance and north cave entrance, although these are relatively small and problematic (as discussed below). Before proceeding to results, I provide more information on sample context.

MAIN CAVE ENTRANCE

The main cave entrance was first tested by Risa Carlson in 1992. In 1996, Moss and Erlandson relocated Carlson's Test Unit 3 in the shell midden berm behind the cave mouth. The test unit fill was removed, exposing undisturbed stratigraphy in the sidewalls of the upper ninety centimetres within the midden berm (Figure 3). Faunal remains were collected from the surface of the unit and the fill from zero to ninety centimetres was screened over 6.35-millimetre (one-quarter-inch) mesh to recover animal bones. Then we excavated below the depth of the cultural deposit to water-worn limestone bedrock (at 120 centimetres). Three bulk samples were recovered from the sidewalls (at depths of 20-45 cm, 60-80 cm, and 90-105 cm). Each consisted of about one gallon (~3.8 litres) of matrix. These samples were not screened in the field but were returned to the University of Oregon for processing and analysis.

NORTH CAVE ENTRANCE

From the upper level of the main chamber in Kit'n'Kaboodle Cave, a low and narrow solution tunnel angles to the northwest for about eighteen metres, providing another outlet to the cave. Some mussel shells and deer bone fragments were found on the surface of this north cave entrance. The floor of the tunnel was strewn with cobbles, some of which may have been piled along the base of the cave walls. Amidst the cobbles is a thin (three- to five-centimetre thick) cave soil with charcoal and shell. A single burned California mussel fragment from a trowel probe (twenty-five centimetres in diameter) excavated in this shell scatter produced a date of ca. 5540-5280 cal BP (Moss and Erlandson 2010), an age comparable with some in north rockshelter. A small number of animal bones were recovered from a bulk sample taken (in 1998) at a depth of zero to five centimetres.

NORTH ROCKSHELTER

Inside the dripline, the floor of the rockshelter extends across an area eighteen metres by eight metres. Much of this was covered by boulders and talus of recent rockfall, particularly in the northwestern two-thirds of the shelter. In the southeastern end of the shelter, the ground surface was relatively level and shell midden was visible over a 7.5-metre-by-4.5-metre area. This midden deposit lay beneath a crawl space where the shelter ceiling was less than sixty centimetres high. A five- to ten-centimetre deep bulk sample was collected in 1994, and in 1996, Probe #1

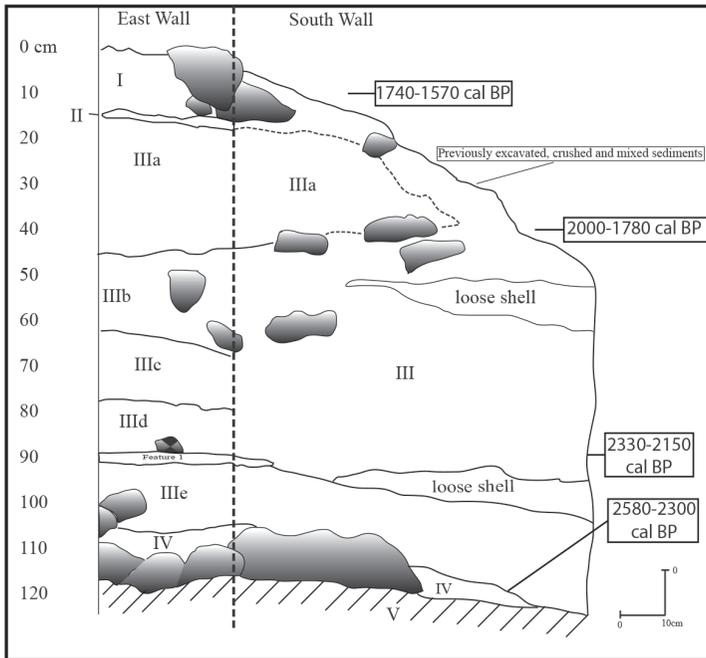


Figure 3. Stratigraphic profile of Unit 3 inside the Main Entrance, Kit'nKabooodle Cave (49-DIX-46). I: loose, dark grey shell midden soil. II: discontinuous 1-2 cm thick lens of brown cave soil, possibly an occupational hiatus. III: dense and dark grey shell midden deposit, with variation in the density of shell, rock, fine sediments. Feature 1: thin lens of charcoal-rich sediment, possible hearth. IV: thin, discontinuous, sterile brown cave soil with quantities of large angular rockfall resting atop. V: limestone bedrock.

was excavated in this crawl space. Probe #2 was placed at the southern end of the shelter, where the ceiling was higher, but reached a depth of only thirty centimetres before encountering rock that prevented further excavation. A sample of *Semibalanus cariosus* from fifty centimetres deep in Probe #1 was dated to 5230-4980 cal BP (Moss and Erlandson 2010). The most recent date from this portion of the site is from the surface, 2690-2460 cal BP.

In 1998, Jane Smith and Erlandson excavated a 0.5-metre-by-1-metre test pit (Unit 3) near the south end of the rockshelter between Probes #1 and #2. Excavations progressed to 110 centimetres without reaching the base of the shell midden. Five discrete strata were identified (Figure 4). Stratum I was a two- to six-centimetre thick layer of forest duff and light brown cave soil that undulated across the surface of the unit. Stratum II (to twenty centimetres) was dark grey-to-black when moist, enriched by charcoal and other organics, with a moderate density of shell, two bone

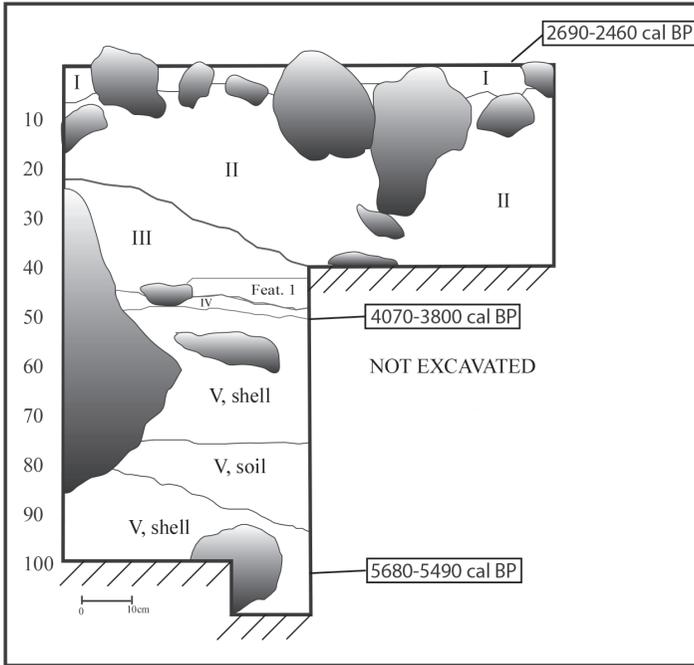


Figure 4. Stratigraphic profile of Test Pit 3 in the North Rockshelter (49-DIX-46). I: forest duff and light brown cave soil. II: dark grey-to-black when moist, charcoal, moderate density of shell and bone. III: shell-rich lens, a portion of a hearth (Feature 1). IV: "bone meal" concentration of fish bones and scales, underlain by small angular cobbles. V: greasy and black cultural matrix with shell and bone, extending beyond limits of excavation.

artefacts (a small bi-point and an awl or leister prong fragment), and quite a bit of bone. Stratum II was not homogenous, with occasional pockets of sandy soil that may be decomposed cobbles. Stratum II sediments were dry-screened over 3.175-millimetre (one-eighth-inch) mesh. Excavation was difficult due to large quantities of angular rockfall. A shell-rich lens marked the beginning of Stratum III, thirty-three to thirty-six centimetres below the surface. Due to the difficulty of working muddy sediments through the screen, this and subsequent levels were water-screened in the intertidal zone. In the southeast corner of the north half of the unit, a portion of a hearth was found at the base of Stratum III, rich in charcoal, burned shell, and ash.

At thirty-eight centimetres in the northwest corner of the unit, a concentration of fish bones and scales was found in brown sediment, extending across the entire unit floor in a two- to three-centimetre thick layer (Stratum IV). The top of Stratum IV in the centre of the north half

of the unit occurred at forty-eight centimetres below the surface. Not all of the thousands of small bones from this stratum were collected. Below Stratum IV was a nearly continuous layer of small angular cobbles. What appeared to be a land otter deposit (Stratum IV) atop cobbles (roof-fall) suggested a hiatus in human occupation between Strata III and V.

Stratum V was cultural and continued to the bottom of the unit. Similar to Stratum III, it was greasy and black, and contained deer bone and shell. For the sixty- to eighty-centimetre level of Stratum V, only a twenty-five-by-fifty-centimetre area in the northeast corner of the test pit was excavated. A small obsidian microblade core fragment (two centimetres long) was recovered in the screen. Because of large rocks in the base of the pit, the excavated area constricted to about ten by fifteen centimetres at a depth of one hundred centimetres. Material from Stratum V (sixty- to eighty-centimetre and eighty- to one-hundred-centimetre levels) was bagged as bulk samples and later processed in the lab. A depth of 112 centimetres below the surface was reached, but the shell midden continued below. A larger trench would have to be opened to reach the base of the cultural deposit. From Test Pit 3, a radiocarbon sample from the top of Stratum V (forty-six to forty-eight centimetres) dated to 4070–3800 cal BP, and a sample from 110 centimetres dated to 5680–5490 cal BP (Moss and Erlandson 2010).

ANALYSIS OF VERTEBRATE ASSEMBLAGE: LABORATORY METHODS

The vertebrate assemblage derives from bone recovered in bulk samples from probes and excavated units as well as from separate lots recovered during test pit excavation. Taxonomic identifications were initially made by me and my students through direct comparison with specimens in the North Pacific comparative collection of reference faunal specimens at the Department of Anthropology, University of Oregon (see <http://pages.uoregon.edu/mmoss/Zooarchaeology-at-Oregon/>). Comparative specimens on loan from Portland State University; University of California, Davis; and the University of Washington were used at various stages in the analysis. Specimens for which we did not have comparative material were submitted to Susan Crockford, Pacific Identifications, Inc. (using the University of Victoria's extensive comparative skeletal collection) at various stages in the analysis (1998, 2010, 2014). Subsequent to each of these stages, I used Crockford's identifications as comparators to assist in identification of additional materials. Both Crockford and I used a microscope to identify small fish bones. Crockford routinely assigned size estimates to fish bone remains, but my students and I did not.

All specimens were identified to skeletal element and taxon to the lowest taxonomic level within the limits of our comparative collections and expertise. Identification protocols for assigning taxonomic categories follow those in Moss (2004). Age, modifications, and damage were noted. Specimens were quantified by count (NISP, number of identified specimens) and weight (measured to 0.1 gram). All observations were recorded on Excel spreadsheets and on tags bagged with the specimens. The 49-DIX-46 vertebrate assemblage currently resides in the Department of Anthropology, University of Oregon (UO), but will be returned to the Tongass National Forest for eventual curation at a federal, state, or tribal repository. Kevin Turley (formerly a UO graduate student) conducted a volumetric analysis of the suspected land otter deposits in 2006. These results are described later.

GENERAL CHARACTERISTICS OF THE ASSEMBLAGE

A total of 5,035 bone specimens, weighing 1015.6 grams, was analyzed. Altogether seventy-one vertebrate taxa were identified: forty-four fish, eighteen birds, and nine mammals. In addition to twenty-three fish, twelve bird, and seven mammal species, thirteen fish, four bird, and one mammal taxa were identified to genus, and eight fish, two bird, and one mammal taxa were identified to family only.

The available sample types from 49-DIX-46 are not ideal (Table 1). From the main cave entrance, we screened Carlson's fill (zero to ninety centimetres) through 6.35-millimetre mesh to recover vertebrate remains, and these can be compared with those recovered through the same mesh size from the ninety- to 120-centimetre level, although the NISP from the latter sample is small. Taken together, rockfish and Sitka black-tailed deer were the most commonly identified taxa from these two samples, but harbour seal, sea otter, black bear, Pacific cod, lingcod, halibut, tufted puffin, common murre, and pelagic cormorant were also identified. From the three bulk samples taken from this part of the site, we expected to identify additional fish taxa, especially those with small body sizes. Like in the one-quarter-inch samples, rockfish was the most abundant taxon. The bulk samples did produce small fish remains, including herring, sculpin, greenling, and prickleback. The bulk samples also yielded a few halibut and salmon bones.

A number of probe samples were taken during the different episodes of site testing from both the north cave entrance and north rockshelter. Some of these were screened over 6.35-millimetre (1996) and 3.175-millimetre (1998) mesh in the field, while others were bulk samples screened

TABLE 1

Taxonomic richness (species, genera, and families) from different sample types from Kit'n'Kaboodle, 49-DIX-46

The counts were of the lowest taxonomic level possible, for example, a family level identification would only be counted if there were no representatives of that family identified to the genus or species level for that sample.

	FISH			BIRDS			MAMMALS			TOTAL						
	N=	#SPE	#GEN	#FAM	#TAXA	N=	#SPE	#GEN	#FAM	#TAXA	#TAXA					
Mustelid strata – 1998 Test Pit 3, I and IV	893	19	10	5	34	28	5	3	2	10	15	2	1	0	3	47
Cultural strata – 1998 Test Pit 3, II, III, V	1286	6	7	6	19	35	7	1	0	8	953	6	0	1	7	34
Main Cave Test Pit 3 – bulk samples	173	4	3	1	8	1	1	0	0	1	10	1	0	0	1	10
Main Cave Test Pit 3 – 1/4" samples	162	3	1	0	4	11	3	1	0	4	65	4	0	0	4	12
Probes – bulk samples	381	5	3	5	13	6	0	0	0	0	276	1	0	0	1	14
Probes – 1/4" samples	38	1	1	0	2	4	2	0	0	2	13	1	0	0	1	5
	2933					85					1332					

over ~1.6-millimetre (one-sixteenth-inch) mesh or unscreened and processed in the lab. Because of differences in processing and the small sample sizes, I cannot make many controlled comparisons. From the north cave entrance bulk sample, deer, herring, halibut, rockfish, and Arctic shanny were identified. If the probes from north rockshelter are taken together, the most common taxa are rockfish, prickleback, and deer. In the one-quarter-inch samples, other taxa represented included marbled murrelet, western grebe, and halibut. The fine-screened samples provided a range of small fish remains: herring, sculpin, cod (gadid), greenling, skate, gunnel (including Arctic shanny), and eelpout. These remains may indicate animal activity, but the results from north rockshelter Test Pit 3 analyses are more definitive.

IDENTIFYING LAND OTTER DEPOSITS

The evidence for land otters occupying north rockshelter at Kit'n'Kaboodle consists of the nature of faunal deposits found on the surface in Stratum I and in Stratum IV of Test Pit 3. On the unexcavated surface, intact land otter scat, remains from partial fish and bird carcasses, and scattered shell (chiton, limpet, mussel, clam, and barnacle) were described by Smith (1998), although these materials were not collected. Although some of the shell and bone could have been transported to the site by other scavengers, including eagles, gulls, or mink, otter scat was conspicuous, and the steep vegetated slopes and overstory vegetation of the site vicinity all suggest use by land otter rather than mink (following Ben-David, Bowyer, and Faro 1996; Ben-David et al. 2005). Mink swim in saltwater only briefly and feed on slow-moving sea urchins and crabs rather than fish (Home 1982), and it is fish remains that dominate the land otter strata, as is described in a later section. Having observed regurgitated remains left by birds, studied the contents of eagle nests, and observed both mink- and land otter-deposited materials on the surface of the Cape Addington site as identified by wildlife biologist Douglas Larsen (Erlandson and Moss 2001; Moss 2004), I can definitively attribute the Kit'n'Kaboodle materials in Strata I and IV to land otter.

On the surface of Test Pit 3, areas where scat had broken down into its bone and shell constituents were observed and sampled. Such bone meal is the remains of otter spraint (scat whose preservation is enhanced by land otter secretions), while scattered fish and bird bone elements of larger size are land otter feeding detritus. In Stratum IV, a concentration of bone meal was described as full of tiny fish bones (Smith 1998). In both strata, fish bones were mixed with heavily fragmented mussels, and the

particle size of most fragments would easily fall through 6.35-millimetre and even 3.175-millimetre screens. Stratum IV was suspected to be a land otter deposit in the field, but only in the laboratory did its similarity to the Stratum I materials become evident.

For both strata, volumetric analysis helps to show that these samples are likely the remains of otter spraint. The recent taphonomic study of European river otter (*Lutra lutra*) spraints by Guillaud et al. (2015) was extremely useful in recognizing some signatures of otter damage on bones. The taxonomic abundances of the cultural and land otter strata are compared to see if differences can be identified. Using behavioural studies conducted by wildlife biologists, I argue below that, when north rockshelter at Kit'n'Kaboodle was not occupied by people, it was sometimes used as a feeding site described in the wildlife literature as an "altar." The north rockshelter is consistent with Home's (1982, 227-28) physical description of an altar: a feeding ledge that is elevated above the shoreline, reached by climbing up steep slopes, and concealed by vegetation. Land otters used this place for some time after 3800 cal BP (Stratum IV), and the site had a similar function in the recent past (Stratum I) that presumably continues today. First, I summarize some crucial background on land otters in southeast Alaska.

LONTRA CANADENSIS IN SOUTHEAST ALASKA

In coastal Alaska, land otters feed primarily in aquatic habitats but also spend time on land. They have colonized numerous islands by swimming across as much as three kilometres of open water (Larsen 1983, 72). They prefer to forage along convex shorelines with steep-sloped bedrock substrates (Larsen 1983, 32; Woolington 1984, 121, 125), facilitating access to nearshore fish (e.g., rockfish, greenlings, sculpins), shellfish, crabs, and marine birds, while minimizing exposure to predators. On land, otters usually stay within about twenty metres of the saltwater shoreline (Larsen 1983, 1), but they sometimes take "short cuts" up to two hundred metres into the woods to cross peninsulas (Larsen 1983, 72) and occasionally travel several kilometres overland. They are known to eat mink and occasionally scavenge deer and sea lion carcasses (Home 1982; O'Clair and O'Clair 1998, 417). They come ashore to den, breed, and rest, sometimes digging tunnels and clearing away branches and other vegetation. Kits are born in May and usually remain at the natal den (built in a burrow beneath rotted stump mounds) until late June or mid-July (Woolington 1984, 122-23). These natal dens, occupied by females and their offspring, tend to be located in secluded areas close to a steady food supply. Land

otters require fresh water to bathe in and their trail systems often lead from dens and resting sites to streams or ponds. Land otter spraints contain scent gland secretions that are chemically distinct and used as territorial markers. Much of the land otters' terrestrial activity involves patrolling and marking their territory and searching for "sign heaps" of other land otters. Land otters tend to deposit spraint on conspicuous boulders, logs, or near the confluence of streams (Chanin 1985, 98-100), sometimes scraping together forest litter in spraint mounds up to 0.3 square metres in size (Larsen 1983, 23).

COMPOSITION OF LAND OTTER SPRAINT

Land otter spraints contain indigestible food parts such as shell, bone, and carapace fragments encased in thick mucus that protects the otters' digestive organs from sharp edges (Home 1982, 234). Adult scats are 2.5 to 8.9 centimetres in length and 1.6 to 2.4 centimetres in thickness (Home 1982, 235). Mussels are common food, and Home (1982, 213) describes quantities of triangular shards of mussel shell in otter scat "indicating that otters masticate parts of the shell, and that these parts pass through their intestines in this sharp-edged form, and in some quantity." Behavioural studies have established the range of taxa otters prey upon. Home (1982, 167-68) lists forty-eight taxa from his field observations and Larsen (1984, 1448-49) lists forty-one taxa from his analysis of 272 scats. Yet dietary analyses conducted by biologists are understandably not focused on volumetric analyses of remains that cannot be identified to family, genus, or species. Although biologists can recognize fresh spraint, to my knowledge spraint buried for hundreds or thousands of years has not been described previously.

THE DENSITY OF BONES IN BONE MEAL

To better characterize the bone and shell meal, Turley conducted volumetric analyses of categories of remains using a low-power microscope, without trying to identify specific taxa. We selected two bags of unscreened bone meal, one from Stratum I and the other from Stratum IV of Test Pit 3. The surface sample weighed 77.3 grams with a volume of 127.5 millilitres, while the Stratum IV sample weighed 18.2 grams with a volume of 42.5 millilitres (Table 2). A conspicuous difference between the samples was that the large amount of shell in the surface sample had already been sorted out by Moss and her students. Therefore, Turley removed shell from both samples. This resulted in a surface bone sample

weighing 11.0 grams (42.5 millilitres) and the Stratum IV bone sample weighing 10.2 grams (30.0 millilitres). From these, large fish vertebrae (centra > 2 mm in diameter) and small fish vertebrae (centra ≤ 2 mm in diameter) were sorted out and counted as well as “large” fish bone (> 2 mm). From the remaining residual (29.5 millilitres from the surface sample and 24.75 millilitres from the Stratum IV sample), three 0.66-millilitre subsamples were taken to quantify smaller bone fragments and fish scales (Table 3). Small scales were less than two millimetres in length, whereas the larger scales were typically more than five to six millimetres in length. Turley counted the scales and small bones using a grid and a hand-held mechanical push counter. The results of this analysis allowed us to estimate the total number of fish bones and scales in the bone meal samples and to extrapolate densities of remains per unit volume (Table 4). Taken together, the samples from Strata I and IV of Test Pit 3 yield densities of 71 to 98 fish bones per millilitre, or 71,000 to 98,000 fish bones per litre. The density of vertebrae smaller than 2 millimetres in diameter ranges from 3 to 10 per millilitre, or 3,000 to 10,000 per litre. The density of fish scales ranges from 56 to 59 per millilitre or 56,000 to 59,000 per litre. These are higher densities than I have ever observed in cultural deposits; hence, I suggest that densities of this magnitude can be used as one characteristic of otter spraint deposits, whether they are found in surface or buried contexts in either archaeological or paleontological sites. Although fish scales are found regularly in fine-screened archaeological bulk samples, they do not usually occur in this density. In Strata I and IV, we also observed bones distorted and damaged by the chewing action of land otters (Figure 5), much like that documented by Guillaud et al. (2015).

TAXONOMIC ABUNDANCES OF LAND OTTER DEPOSITS VS. CULTURAL DEPOSITS

All vertebrate remains from the buried strata in the main entrance of Kit’n’Kaboodle Cave are assumed to be of cultural origin. These are taken together with the cultural strata from north rockshelter Test Pit 3: II, III, and V. Against these cultural strata, the land otter strata (I and IV) from North Rockshelter Test Pit 3 are compared (Table 5). In this comparison, eighteen fish taxa are found only in the land otter strata: wolf eel, some small sculpins (padded, scalyhead, smoothhead, prickly, and red Irish lord), walleye pollock, threespine stickleback, northern clingfish, snailfish, some small flatfish (flathead and rock sole, starry flounder), high cockscomb, and several pricklebacks (*Lumpenus*

TABLE 2

Stage 1 volumetric analysis of unscreened "bone meal" samples from surface and Stratum IV of Test Pit 3, North Rockshelter

As described in the text, "large" vertebrae were defined as centra >2mm and "small" vertebrae were defined as centra ≤2mm.

	NISP	WEIGHT (G)	VOLUME (ML)
SURFACE			
Shell	n/a	66.30	85.00
Large vertebrae	37	1.10	4.50
Small vertebrae	93	0.50	3.25
Other fish bone	52	1.40	5.25
Residual	n/a	8.00	29.50
Total		77.30	127.50
STRATUM IV			
Shell	n/a	8.00	12.50
Large vertebrae	29	0.40	2.00
Small vertebrae	233	0.50	2.00
Other fish bone	12	0.20	1.25
Residual	n/a	9.10	24.75
Total		18.20	42.50

TABLE 3

Stage 2 volumetric analysis of unscreened "bone meal" samples from surface and Stratum IV of Test Pit 3, North Rockshelter; fish bone (NISP) quantified from subsamples of "residual"

As described in the text, "large" vertebrae were defined as centra >2mm and "small" vertebrae were defined as centra <2mm. "Large" scales were defined as >2mm in length, and "small" scales were <2mm.

	SUBSAMPLE 1 (0.66 ML)	SUBSAMPLE 2 (0.66 ML)	SUBSAMPLE 3 (0.66 ML)	TOTAL 2 ML	ESTIMATED (x 14.75)
SURFACE					
Large vertebrae	0	0	0	0	0
Small vertebrae	1	1	0	2	30
Large scales	12	15	8	35	516
Small scales	43	27	56	126	1859
Other fishbone	11	8	12	31	457
STRATUM IV					
Large vertebrae	0	0	0	0	0
Small vertebrae	1	2	1	4	50
Large scales	5	8	9	22	272
Small scales	39	51	30	120	1485
Other fish bone	26	17	26	69	854

TABLE 4

Volumetric analysis of "bone meal" samples from surface and Stratum IV of Test Pit 3, North Rockshelter, based on Stage 1 and Stage 2 Analyses

	ESTIMATED NISP		TOTAL NISP	NISP/ML
	NISP (STAGE 1)	(STAGE 2)		
SURFACE				(/42.5)
Large vertebrae	37	0	37	0.87
Small vertebrae	93	30	123	2.89
Large scales	n/a	516	516	12.14
Small scales	n/a	1859	1859	43.74
Other fish bone	52	457	509	11.98
Total	182	2862	3044	71.62
STRATUM IV				(/30.0)
Large vertebrae	29	0	29	0.97
Small vertebrae	233	50	283	9.43
Large scales	n/a	272	272	9.07
Small scales	n/a	1485	1485	49.50
Other fish bone	12	854	866	28.87
Total	274	2661	2935	97.83



Figure 5. Wolf eel (*Anarrhichthys ocellatus*) vertebrae from Stratum I of Test Pit 3, North Rockshelter (49-DIX-46) showing compression, deformation, and damage due to land otter chewing and digestive acids.

TABLE 5
Kit'n'Kaboodle vertebrate remains (NISP) summary
 (Families are ordered alphabetically within class.)

TAXON	COMMON NAME	1998 TEST PIT 3		MAIN CAVE		PROBES		TOTAL
		I & IV	II, III, V	BULK	1/4"	BULK	1/4"	
FISH								
Anarchichadidae								
<i>Anarrhichthys ocellatus</i>	wolf eel	32						32
Clupeidae								
<i>Clupea pallasii</i>	Pacific herring	6	7	3		9		25
Cottidae	sculpin	91	79	1		8		179
<i>Artedius fenestratus</i>	padded sculpin	1						1
<i>Artedius cf. barringtoni</i>	scalyhead sculpin	1						1
<i>Artedius lateralis</i>	smoothhead sculpin	1						1
<i>Cottus asper</i>	prickly sculpin	1						1
<i>Enophrys</i> sp.	buffalo-type sculpin	14						14
<i>Enophrys bison</i>	buffalo sculpin	1	3					4
<i>Hemilepidotus</i> sp.	Irish lord	35	2					37
<i>Hemilepidotus hemilepidotus</i>	red Irish lord	2						2
<i>Oligocottus maculatus</i>	tidepool sculpin	8	4					12
Gadidae		1	2			4		7
<i>Gadus chalcogramma</i>	walleye pollock	10						10
<i>Gadus macrocephalus</i>	Pacific cod					2		
Gasterosteidae								
<i>Gasterosteus aculeatus</i>	threespine stickleback	1						1
Gobiesocidae								
<i>Gobiesox maeandricus</i>	northern clingfish	18						18
Hexagrammidae								
<i>Hexagrammos</i> sp.	greenling	56	86	1		8		151
<i>Hexagrammos lagocephalus</i>	rock greenling			1		3		
<i>Ophiodon elongatus</i>	lingcod					2		
Liparididae		4						4
<i>Careproctus</i> sp.	snailfish	2						2
Osmeridae								
<i>Mallotus villosus</i>	capelin	90	2					92
Pholidae	gunnel	139	7			1		147
<i>Pholis cf. laeta</i>	cf. crescent gunnel		1					1

TAXON	COMMON NAME	1998 TEST PIT 3		MAIN CAVE		PROBES		TOTAL
		I & IV	II, III, V	BULK	1/4"	BULK	1/4"	
Pleuronectidae	flatfish		10					10
<i>Hippoglossoides elassodon</i>	flathead sole	1						1
<i>Hippoglossus stenolepis</i>	Pacific halibut		13	1	2	1	4	21
<i>Lepidopsetta</i> sp.	rock sole	1						1
<i>Platichthys stellatus</i>	starry flounder	1						1
Rajidae								
<i>Raja</i> sp.	skate					1		
Salmonidae			2					2
<i>Oncorhynchus</i> spp.	salmon	2	5	1				8
Scorpaenidae								
<i>Sebastes</i> sp.	rockfish	46	117	25	77	9	14	288
<i>Sebastes</i> cf. <i>nebulosus</i>	cf. China rockfish		1					1
Stichaeidae		30	6			12		48
<i>Anoplarchus purpurascens</i>	high cockscomb	10						10
<i>Lumpenus</i> sp.	prickleback	2						2
<i>Lumpenus sagitta</i>	snake prickleback	2						2
<i>Stichaeus punctatus</i>	Arctic shanny	22	1			2		25
<i>Xiphister</i> sp.	prickleback	12	2					14
<i>Xiphister atropurpureus</i>	black prickleback	7						7
<i>Xiphister mucosus</i>	rock prickleback	3		1		20		24
Zoarcidae	eelpouts					8		
Unidentified fish		240	936	139	79	295	20	1709
BIRDS								
Accipitridae								
<i>Haliaeetus leucocephalus</i>	bald eagle		1					1
Alcidae		5						5
<i>Aethia</i> sp.	auklet	1						1
<i>Aethia cristatella</i>	crested auklet	1	3					4
<i>Aethia pusilla</i>	least auklet		2					2
<i>Brachyramphus marmoratus</i>	marbled murrelet						1	
<i>Lunda cirrhata</i>	tufted puffin				1			
<i>Ptychoramphus aleuticus</i>	Cassin's auklet		3					3
<i>Uria aalge</i>	common murre	3	3		1			7
Anatinae	duck	2						2

TAXON	COMMON NAME	1998 TEST PIT 3		MAIN CAVE		PROBES		TOTAL
		I & IV	II, III, V	BULK	1/4"	BULK	1/4"	
Corvidae								
<i>Cyanocitta stelleri</i>	Steller's jay	1	1					2
Gavidae								
<i>Gavia</i> sp.	loon					2		
Hydrobatidae								
<i>Oceanodroma furcata</i>	fork-tailed storm-petrel	1	1					2
<i>Oceanodroma leucorhoa</i>	Leach's storm-petrel	1						1
Phalacrocoracidae								
<i>Phalacrocorax</i> sp.	cormorant	5	5					10
<i>Phalacrocorax pelagicus</i>	pelagic cormorant			1	6			
Podicipedidae								
<i>Aechmophorus occidentalis</i>	western grebe						1	
<i>Podiceps</i> sp.	grebe	1						1
Unidentified passerine		2	1					3
Unidentified bird		5	15		1	6	2	29
MAMMALS								
Cervidae								
<i>Odocoileus b. sitkensis</i>	Sitka black-tailed deer	1	85	3	44	12	9	154
Cricetidae								
<i>Peromyscus</i> sp.	mouse	1						1
Mustelidae								
<i>Enhydra lutris</i>	sea otter		7		1			8
<i>Lontra canadensis</i>	land otter		2					2
<i>Mustela vison</i>	mink		2					2
Phocidae								
<i>Phoca vitulina</i>	harbour seal		2		4			6
Soricidae								
<i>Sorex monticolus</i>	dusky shrew	1	1					2
Ursidae								
<i>Ursus americanus</i>	black bear				1			
Unidentified mammal		12	853	7	15	264	4	1155
Unidentified mammal/bird		18	616	22		29		685
Total		954	2890	206	238	692	55	5035

sp. and snake, black, and rock). In addition, the majority of certain small fish remains occur mostly in the land otter strata; 95 percent of the site's Irish lord, 98 percent of capelin, 94 percent of gunnel, and 88 percent of Arctic shanny were found in Strata I and IV. The only small fish present elsewhere but missing from the land otter strata is eelpout (zoarcid), some of which were found in fine-screened samples from the surface levels of probes in north rockshelter. It seems rather likely that these can also be attributed to land otter. In Larsen's (1984) study of 272 land otter scat samples from southeast Alaska, only two fish families are not represented in Strata I and IV: ammodytid (sandlance) and embiotocid (surf perch). In O'Clair and O'Clair's (1998) overview, the following taxa found in Strata I and IV are specifically mentioned as known prey of land otters: buffalo sculpin, smoothhead sculpin, pholids, and pricklebacks. Many of these taxa are denizens of the intertidal zone, occupying tidepools or hiding under rocks that would be accessible to land otters during different stages of the tide. Intertidal taxa include some sculpins (padded, scalyhead, smoothhead, Irish lord), northern clingfish, snailfish, cockscomb, pricklebacks (Arctic shanny, snake, black, and rock), and gunnels (Love 1996; O'Clair and O'Clair 1998). Rock sole and starry flounder can also be taken in the intertidal zone. None of the fish taxa found in the land otter strata can be used to infer seasonality of land otter use.

In the cultural samples, the only taxa found that were not also present in the land otter strata include flatfish bones identified to family (pleuronectid), halibut, salmonid, and China rockfish (*Sebastes cf. nebulosus*; a single cleithrum identified by Crockford). Most of these are larger-bodied fish, although fish size has not been recorded systematically. Fish taxa that co-occur in both land otter and cultural deposits include: herring, buffalo sculpin, tidepool sculpin, gadid (identified to family), greenling, salmon, rockfish (identified to genus), and stichaeid (identified to family).

By way of comparison, relatively few bird and mammal taxa were found exclusively in the land otter strata; duck, Leach's storm-petrel, and grebe were found on the surface, and a mouse bone (likely intrusive) was found in Stratum IV. Cultural samples produced nine bird and mammal taxa missing from the land otter strata: bald eagle, least auklet, Cassin's auklet, pelagic cormorant, sea otter, land otter, mink, harbour seal, and black bear. Clearly, the cultural strata produced more bird and mammal species than did the land otter strata. The cultural strata also provided clues as to season of occupation. In Stratum III, remains of a foetal/newborn sea otter suggest spring occupation, although sea otters can give birth during other seasons (O'Clair and O'Clair 1998, 415). In

Stratum V, juvenile remains of deer, land otter, sea otter, and harbour seal were identified. In the main cave entrance, remains of a juvenile black bear were found. Taken together this suggests that the cultural levels were deposited during spring and summer.

To more adequately compare the fish taxa between the land otter and cultural strata, the identifications were collapsed to the family level (see Driver 1992). Of the 653 NISP identified to at least the family level from the land otter strata (I, IV), 24 percent were sculpins, 21 percent gunnels, 14 percent capelin, 14 percent pricklebacks, 9 percent greenlings, 7 percent rockfishes, 5 percent wolf eel, and 3 percent northern clingfish (Figure 6). Of the 350 NISP identified to at least the family level from the cultural strata from the same test pit (II, III, V), 34 percent were rockfishes, 25 percent sculpins, 25 percent greenlings, 6 percent flatfishes, and 3 percent pricklebacks. Although sculpins, rockfishes, and greenlings were found in significant proportions in both samples, the body size of the fish in the land otter samples was smaller overall, although this is a general observation, not one backed up with measurements. Of the fish exclusively present in the land otter strata, a number reach maximum lengths of no more than fourteen centimetres. These include scalyhead and prickly sculpins, threespine stickleback, and snailfish; two other small taxa mostly found in land otter strata are capelin and gunnel. To consider taxonomic diversity, I calculated the reciprocal of the Simpson Index (Krebs 1989); the land otter strata (I, IV) yielded a more diverse assemblage (6.46) than did the cultural strata (II, III, V), the latter with a Reciprocal Simpson Index of 4.10.

Analysis of the 49-DIX-46 remains indicate that land otters preyed upon a wider variety of fish species than did people, especially small species. The land otter assemblage has a higher measure of diversity in that more taxa are represented with greater evenness of abundances across taxa (even when collapsed to family) when compared to the cultural strata. This is not unexpected; the human residents of Kit'n'Kaboodle were obviously more selective, choosing fewer taxa and generally larger-bodied fishes (producing assemblages much like those reported by contributors to Moss and Cannon [2011]). Both humans and land otters were likely taking fish in the vicinity of Kit'n'Kaboodle; most of the land otter prey could have derived from tidepools and intertidal rocks, while people took fish from deeper waters, either from shore or boats. Although a single or set of indicator species that will *always* signal the presence of land otters cannot be identified, the taxonomic composition of the Strata I and IV assemblage should be helpful in identifying land otter deposits in other Northwest Coast sites.

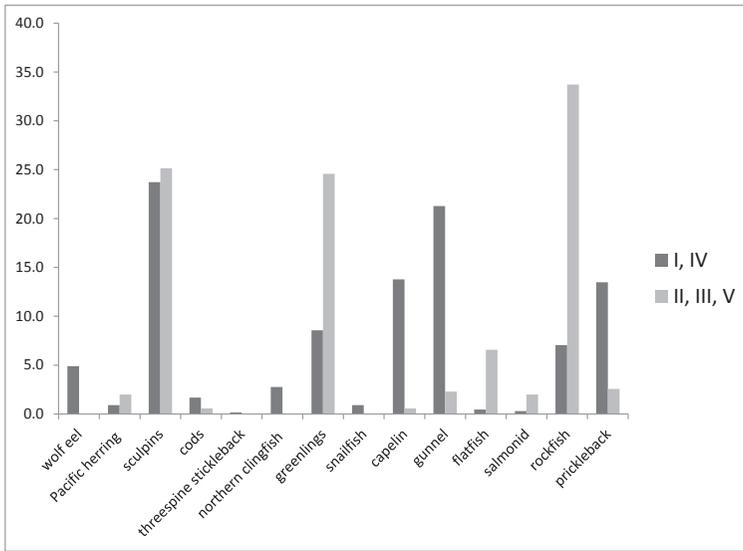


Figure 6. Taxonomic abundances (%) of fish families in land otter Strata (I, IV) and Cultural Strata. (II, III, V) in Test Pit 3, North Rockshelter (49-DIX-46).

NORTH ROCKSHELTER: HUMAN CAMPSITE AND LAND OTTER ALTAR

Starting in the middle Holocene (~5700 cal BP), people used north rockshelter at Kit'n'Kaboodle as a temporary campsite over a period of thirty-three hundred years. They subsisted on large quantities of acorn barnacles (*Semibalanus cariosus*; Moss and Erlandson 2010); hunted deer, sea otter, and seal; and fished for rockfish, greenlings, sculpins, halibut, and other flatfish. During times when people were not living at the site, it could be intermittently used by land otter(s), and, sometime after 3800 cal BP, land otter usage was of significant enough duration or intensity to leave behind an accumulation of otter spraint and feeding debris. The analysis of vertebrate faunal remains from Test Pit 3 in north rockshelter identifies differences between the focal activities of people versus the behaviour of land otters.

Home (1982, 225-32) describes four types of land otter eating activity sites in southeast Alaska: (1) incidental or random feeding sites located below the high tide line; (2) middens comprised of piles of food remains and scat; (3) altars, which are middens on elevated rocks, where remains are conserved as territorial markers; and (4) expanded surface sites, covering a zone one hundred metres or more in linear extent. Using these definitions, north rockshelter best conforms to the altar activity site. Strata IV and I are clearly middens located in a narrow rockshelter

ten metres up a steep slope above the intertidal zone. The build-up of debris in both strata indicates that these remains were “conserved” by land otters in that the otters returned to the site to feed and mark their territories with spraint. Although no clearly defined sign heaps or spraint mounds were noted, these may have been built in the past but were not recognized archaeologically. Land otters could occupy this site in relative obscurity with vegetation concealing them from predators. On Dall Island, their only predators would be black bears and wolves, although a land otter kit might be vulnerable to an eagle (Home 1982).

Sometime after 2600 cal BP, people started to occupy the main chamber of Kit’n’Kaboodle Cave, which they did over a one-thousand-to thirteen-hundred-year period. The residents of the cave collected mussels, probably from the immediate vicinity. They fished for large rockfish, hunted deer, and took the occasional seal, sea otter, and black bear. Unfortunately, we lack radiocarbon dates from the uppermost strata in both site loci, so the most recent human occupation in either place cannot be determined. I suspect that the land otters continue to use north rockshelter today.

CONCLUDING THOUGHTS

The west side of Dall Island is characterized by small, short, steep-sided inlets, and the distance between inlets is large enough to challenge canoe travellers during times of high waves. Although Kit’n’Kaboodle is situated up inside the semi-protected inlet of Gold Harbor, the site is fairly remote, and canoe travel must have been seasonally limited, especially during the darker months of the year. Much of the unprotected outer coast of the Prince of Wales Archipelago may have been used only seasonally, like Cape Addington and the Forrester Islands (Moss 2004, 2007). These places provided great fishing grounds and abundant breeding seabirds and marine mammals but primarily during the spring, summer, and perhaps into the early fall. The lack of a year-round human settlement at Kit’n’Kaboodle, and perhaps at other caves and rockshelters in the vicinity, provided opportunities for animals to live in places that would otherwise host human occupation. When people were absent, land otters and other animals may have left behind food remains mixed in with cultural deposits.

The body of this article focuses on the distinctions between the vertebrate assemblages left by people and those deposited by land otters. The main differences include taxonomic composition, the size of prey taxa, and the particle size and density of the remains. Yet it is the simi-

larities between people and land otters that I believe have contributed to traditional Tlingit ideas about them. Land otters lived (and live) in some of the same places people did. They were skilled at catching fish, as are the Tlingit and other Northwest Coast groups. Land otters are excellent swimmers, while the Tlingit were expert canoeists. People and land otters even captured some of the same fish, although the taxonomic composition of their assemblages has been shown to differ. Land otters accumulated shell and bone on terrestrial sites, much like the shell middens left by people. At places like north rockshelter at Kit'n'Kaboodle, they occupied the same place, although at different times.

At the point in the nineteenth century when Tlingit hunters and trappers pursued land otters for their skins as part of the fur trade, the relationship between Tlingit and land otters became one of predator to prey. Prior to this, it is hard to characterize the ecological relationship between Tlingit and land otters. At Kit'n'Kaboodle, only a single juvenile tooth and a fragmentary land otter phalanx were found in Strata V and II, respectively. As we have seen in north rockshelter, land otters and people could occupy the same place on the landscape and fish for some of the same types of fish, but they were not in direct competition since they relied on different habitats; while land otters specialized in small tidepool fish, people took larger fish somewhat further from shore. The relationship cannot be characterized as mutualistic, in which two species benefit from their interaction, nor was it commensal, in which one species benefits and the other is not affected. The relationship between most Tlingit people and land otters was one of mutual avoidance; people feared land otters because of their supernatural power, and land otters generally shy away from people and their settlements.

The spirit of the land otter was sought by shamans so that he (or she) could use its intense, dangerous, supernatural power to pursue his or her own goals (Jonaitis 1986, 90-93). Removal of a land otter's tongue was dangerous and empowering to a shaman. The tongue was collected in a bundle and conserved in a box. The shaman might also wear it on a twisted spruce root cord as an amulet (Emmons 1991, 373). The land otter spirit was the most powerful animal spirit a shaman could acquire. Shamans and land otters shared a preference for rocky promontories, and their relationship did involve direct interaction. An isolated promontory or point was the ideal spot for a shaman's grave and also a favourable spot for a land otter feeding or latrine site; land-otter-people are sometimes called "Point People" or Q!atkwedí' (Swanton 1909, 29). A shaman might expect to encounter a land otter at such a place.

In his excellent study of what he calls “the Tlingit land otter complex,” Barazzuol (1988) examines nineteen Tlingit myths in which land otters appear. He characterizes the land otter as a “symbolic bridge,” a liminal being uniting human and animal, adapted to both land and water, as were the Tlingit themselves (75). The Tlingit had set protocols and many rituals (including the memorial potlatch) to perform after the normal death of a person, to ensure that part of his or her spirit would be reincarnated (Kan 1989). In contrast, the fate of a person who drowned or was lost in the woods and whose body was never recovered was very disturbing because the spirits were left adrift and could do harm. Yet, according to Barazzuol (1988, 99), there was a form of reincarnation that was available to those who had drowned or been lost: they might become the spirits of a shaman. This was the way a lost soul could be reintegrated into Tlingit society. When someone returned (even temporarily) from the land otter realm, s/he often helped relatives in need by providing devilfish (octopus) as bait, catching halibut, or spearing seals (e.g., Swanton 1909, 29–33). As Barazzuol (1988, 101) observes, when a shaman returned from the land otter realm, s/he was able to use his/her special knowledge of healing. Further, “the land otters mediated between life and death because it was from them that the shaman learned to overcome death” (103).

To conclude, the remains of Kit’n’Kaboodle have directed attention to an animal person (Hill 2013), the land otter, who played a special role in Tlingit society. Some behaviours of the land otter, particularly fishing and the accumulation of fish bones and shell, are similar to those of people. I suggest that Tlingit knowledge of these behaviours and awareness of land otter activity have contributed to Tlingit ideas about the capacity of land otters to transform into persons and vice versa. From the framework of relational ecology, Betts, Hardenberg, and Stirling (2015, 89) have recently explained “how animals create human history”; certainly knowledge of land otters is deeply integrated into Tlingit society and ideology. I hope this article helps other Northwest Coast archaeologists in their investigations of human-animal relationships encapsulated in sites like Kit’n’Kaboodle.

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