PRECONTACT DOGS FROM THE PRINCE OF WALES ARCHIPELAGO, ALASKA

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ABSTRACT

For the first time, precontact domestic dog (*Canis familiaris* Linnaeus, 1758) remains are described in detail from five locations in the Prince of Wales Archipelago, Southeast Alaska. Four of these derive from northern Prince of Wales Island itself: Coffman Cove (49-PET-556 and 49-PET-067), Lost Dog Cave (49-CRG-585), and Kushtaka Cave (49-PET-410). The fifth site is Cape Addington Rockshelter (49-CRG-188), located on Noyes Island, west of Prince of Wales Island. The sites span a time period of 5500 to 700 cal BP, with dog remains associated with dates between 3800 and 1000 cal BP. Although dog bones and teeth are not numerous from any site, this set of remains suggests that the Prince of Wales Archipelago dogs ranged in size as much as dogs from similar-aged coastal sites in southern British Columbia and Washington State. These Prince of Wales dogs fall within the size range previously identified by Crockford (1997, 2009) as "village dogs" and "wool dogs." We presently lack any evidence that these Alaskan dogs were bred or maintained for wool production, as small dogs were by the Coast Salish and Makah who reside(d) on the southern Northwest Coast.

KEYWORDS: village dog; wool dog; late Holocene; canid; wolf; Canis familiaris; Southeast Alaska; domestic; North America; New World

INTRODUCTION

Of the more than 2800 archaeological sites on record in Southeast Alaska, approximately 180 sites have undergone some subsurface testing (Moss et al. 2011). Of these, only sixty-four sites have been described in sufficient detail to understand faunal recovery and analytical methods. Dog remains have been identified from nine sites, with an additional four sites yielding "canid"[1] remains that might be dog (Table 1). Even though dog remains have been reported from these sites, they have not attracted much attention or analysis. The lack of attention to dog remains in published literature from Alaska may be because North American archaeologists and zooarchaeologists alike have, until recently, attributed little cultural importance to the presence of dog bones (Crockford 2000).

We now know that skeletal remains of domestic dogs are ubiquitous constituents of precontact archaeological deposits across North America, including Alaska (Allen 1920, 1939; Crockford 2005; Haag 1948; Schwartz 1997), with the notable exception of the Aleutian Islands west of Akun (Crockford 2012; Holland 2004). For nearly ten

1 The family Canidae includes dogs, wolves, coyotes, and foxes. See Gentry et al. (2004:649) for an explanation of the ruling by the International Commission on Zoological Nomenclature (ICZN) on the use of Latin names for domestic animals.

Table 1: Archaeological Localities in Southeast Alaska with Dog and Canid Remains

Site Number	Site Name	Dog?	Canid?	Reference
49-CRG-188	Cape Addington Rockshelter	yes		Moss 2004
49-CRG-236	Rosie's Rockshelter		misidentified **	Ackerman et al. 1985
49-CRG-585*	Lost Dog Cave	yes		this paper
49-PET-067	Coffman Cove	yes		Moss 2008
49-PET-410	Kushtaka Cave	yes		this paper
49-PET-556	Coffman Cove Ferry Terminal	yes		Moss 2007a
49-SIT-119	Hidden Falls	yes		Moss 1989b
49-SIT-124	Killisnoo Picnicground	yes		Moss 1989, 2007b
49-SIT-244	Daax Haat Kanadaa	yes		de Laguna 1960; Moss 1989a
49-SIT-283	Wilson Cove Rockshelter	yes		Irish et al. 1993
49-SUM-025	North Point		yes	Bowers and Moss 2001
49-XPA-029	Elena Bay Village		yes	Maschner 1992
49-XPA-039	Step Island Village		yes	Maschner 1992
49-XPA-112	unnamed		yes	Maschner 1992
49-YAK-007	Old Town	yes		de Laguna et al. 1964

*Although this site has been assigned an AHRS number, it appears to be a natural accumulation of dog bones, not an archaeological site *per se*. For this reason, it is not counted in the archaeological site tallies in the introduction to this paper.

**A vertebra identified as "*Canis* sp." in a preliminary student analysis was reported in Ackerman et al. (1985:105). Pacific Identifications, Inc., re-analyzed remains from 49-CRG-236 in 1987, and identified this specimen as either harbor seal (*Phoca vitulina*) or sea otter (*Enhydra lutris*).

thousand years, dogs were the only domesticated animal in North America. The turkey was not domesticated until 2000 years ago (Speller et al. 2010). No dogs were present in the Americas prior to human migrations, and precontact dog remains are almost as early as the oldest human skeletal remains (Morey and Wiant 1992).

Archaeological and genetic research indicates that dogs were domesticated in the Old World and brought "ready-made" to the Americas by their human companions (e.g., Crockford 2000, 2005; Koop et al. 2000). The earliest North American dog remains reported thus far are from Danger Cave, Utah, and date between 10,000 and 9,000 years old, suggesting that dogs came to the Americas with some of the earliest human immigrants (Crockford 2005; Morey 2010). Mounting evidence, including sites with human remains dating to the very early Holocene (Dixon 2001; Fedje et al. 2004; Kemp et al. 2007), indicates that Southeast Alaska was part of an important early coastal route south from Beringia (Baichtal and Carlson 2010; Erlandson et al. 2008; Fedje and Mathewes 2005; Heaton and Grady 2003). Eventually, some very early, Late Pleistocene dog remains will likely be found in this area.

Recent research is focusing more attention on the cultural importance of dogs throughout human history. Dogs served a number of roles in aboriginal societies, including guarding villages and individuals from wild animals and aggressive human neighbors, cleaning residential sites of food debris and human waste, and assisting human hunters in tracking and cornering prey (Crockford 2000). Although dogs do not appear to have been eaten regularly in most parts of the world, in others they have been consumed as food routinely, during times of famine or as part of specific rituals (Schwartz 1997). In many societies, the human-dog partnership bond (Morey 2006; Taçon and Pardoe 2002) has led to human respect for the capacities and skills of dogs, such as their acute senses of hearing and smell. Dogs with special powers play roles in the mythologies of several northern societies (e.g., Boas 1970:742; de Laguna 1972:875–879). Among some groups, dogs apparently served important spiritual roles, as evidenced by the frequency with which deliberate, ritual burials of dogs are encountered archaeologically, alone and as inclusions within human interments (e.g., Crockford 2009; Cybulski 1992; Fugate 2001, 2010; Losey et al. 2011; Morey 2006, 2010; Morey and Wiant 1992). On the southern Northwest

Coast of North America, ethnographic and archaeological evidence has documented two types of dogs (Crockford 1997, 2009), to be discussed in more detail below. The cultural significance of dogs to precontact aboriginal societies has only just begun to be realized and more comprehensive reporting of dog remains is needed from all regions.

Here we attempt to rectify this situation for the Prince of Wales Archipelago at the south end of Southeast Alaska. Dog remains from five locations are reported, two of which are caves that include natural accumulations of animal bones and three are archaeological habitation sites. As shown in Fig. 1, four of these sites are located on northern Prince of Wales Island: Lost Dog Cave (49-CRG-585), Kushtaka Cave (49-PET-410), the Coffman Cove Site (49-PET-067), and the Coffman Cove Ferry Terminal Site (49-PET-556). The fifth site, Cape Addington Rockshelter (49-CRG-188), is located on Noyes Island off the west coast of Prince of Wales Island, but within the archipelago.[2]

Although sample sizes are small (Table 2), there are enough measurable elements recovered from these five sites to allow comparison to dog remains from similar-aged coastal sites in southern British Columbia and western Washington State. These latter samples were analyzed by Susan Crockford more than ten years ago (Crockford 1997; Crockford and Pye 1997), and are hereafter designated

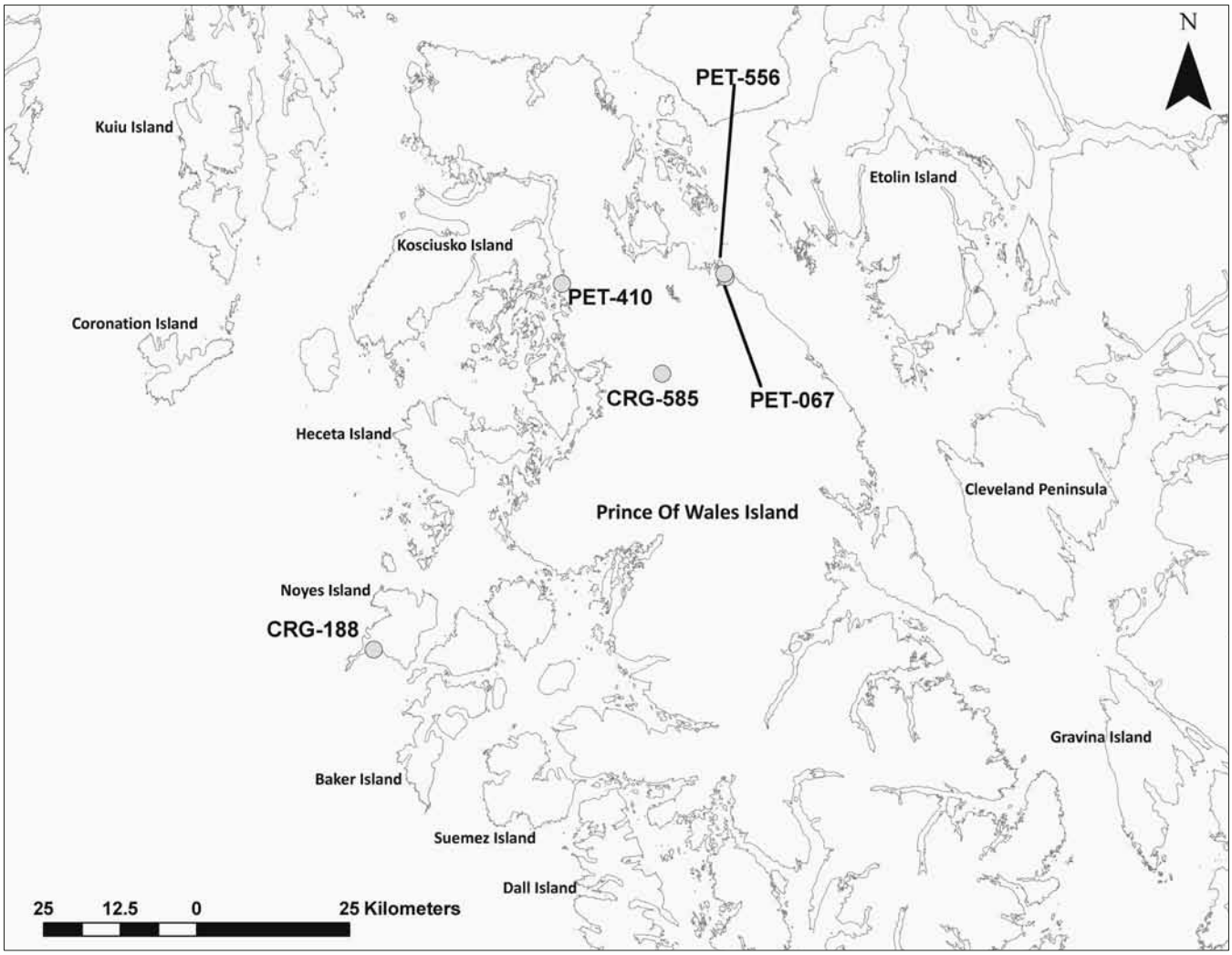

Figure 1: Locations of sites discussed in the Prince of Wales Archipelago. Map by J. F. Baichtal.

2 Materials from 49-CRG-585 and 49-PET-410 will be held at Forest Service offices in Thorne Bay, Alaska, once analyses are complete. Materials from 49-PET-067, 49-PET-556, and 49-CRG-188 are currently held at the University of Oregon, but will be curated at the University of Alaska Museum of the North in Fairbanks.

"south coast dogs." The south coast dog analysis used archaeological data to corroborate the ethnographic and historic evidence that aboriginal people living on the Olympic Peninsula and along the Strait of Georgia kept two distinct types of dog: a short-haired, dingo-like animal and a smaller, long-haired dog with upright ears and a curled tail. The larger short-haired animal, usually referred to as a "village dog," was the most common type encountered in all Native American and First Nations settlements in North America (Allen 1920; Haag 1948), while the smaller, long-haired animal was only reported from Coast Salish and Makah territories and is usually referred to as a "wool dog," because the "wool" was sheared, spun, and woven into blankets (Fig. 2; see Crockford 1997; Crockford and Pye 1997). Estimated shoulder heights for Crockford's (1997:105) sample are given as follows: village dog, 47–59 cm (mean 52 cm); wool dog, 35–50 cm (mean 44 cm).

THE PRINCE OF WALES ARCHIPELAGO DOG SAMPLES

LOST DOG CAVE, 49-CRG-585

This karst cave, situated at 156 meters above sea level (asl) and more than four km from the coast, was found by Jim Baichtal in 1992 in the course of a routine US Forest Service timber survey of central Prince of Wales Island. A mammal skull (Fig. 3) and several other bones were lying on the

Table 2: Domestic dog elements reported for the Prince of Wales Archipelago with direct dates (on bone) and age estimates of associated levels, if available (see text for details). Availability of metric data (osteometric measurements) indicated.

Site	Dog element	^{14}C age direct	Cal age direct	Cal age of associated level	Metric data?
Lost Dog Cave, 49-CRG-585	Skull, two pieces, w. P2	2450 ± 40 RCYBP	1850–1690 cal BP		yes
	R. metatarsal IV				yes
	R. metacarpal IV, prox. half				no
	R. ulna, distal half				no
	R. humerus				yes
	L. scapula				yes
	cervical vertebra C1				yes
	thoracic vertebrae, T10 & T12				yes
	L. upper premolar tooth, P^4				yes
	L. humerus, eroded				no
	L. innominate, eroded				no
	R. femur shaft, distal, eroded				no
	R. mandible fragments (2)				no
	metapodial shaft fragments (2)				no
	rib fragments (4) + complete rib (1)				no
Kushtaka Cave, 49-PET-410	lumbar vertebra, L7			n/a	no
	upper 1st molar tooth, M^1			n/a	no
	metacarpal II			n/a	yes
Coffman Cove, 49-PET-556	thoracic vertebra (T13)			2330–2130 cal BP	yes
	R. humerus, dist. end			2330–2130 cal BP	yes
	assorted teeth (5) + misc. fragments (12)			n/a	no
Coffman Cove, 49-PET-067	R. mandible, with teeth			3800–3720 cal BP	yes
	L. metatarsal III			3800–3720 cal BP	yes
	L. metacarpal IV			3510–3300 cal BP	yes
	assorted teeth/tooth frags (34)			n/a	no
	skull/mandible frags (7) + vertebrae (2)			n/a	no
	foot bones (9) + long bone frags (2)			n/a	no
Cape Addington Rockshelter, 49-CRG-188	rib, undetermined			n/a	no
	premolar tooth, undetermined			1500–1090 cal BP	no
	caudal vertebra, undetermined			1490–1290 cal BP	no
	mandible, incomplete			1170–1030 cal BP	yes

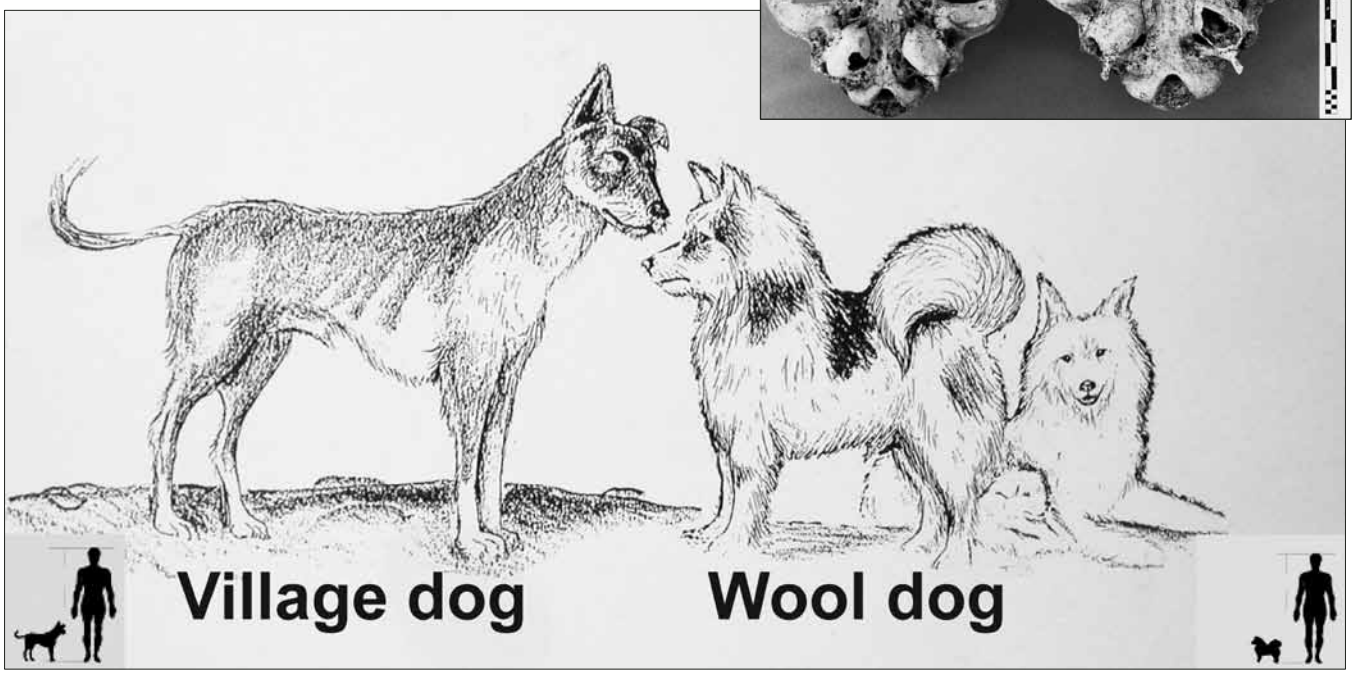

Figure 2: Left: Artist representation of the larger village dog and the smaller wool dog defined by Crockford (1997). Right: Skulls (palate view) of a Type 1 (wool dog) on the left and a Type 2 (village dog) on the right. Sketches by Cameron Pye (Crockford and Pye 1997). Photo by H. Moffat.

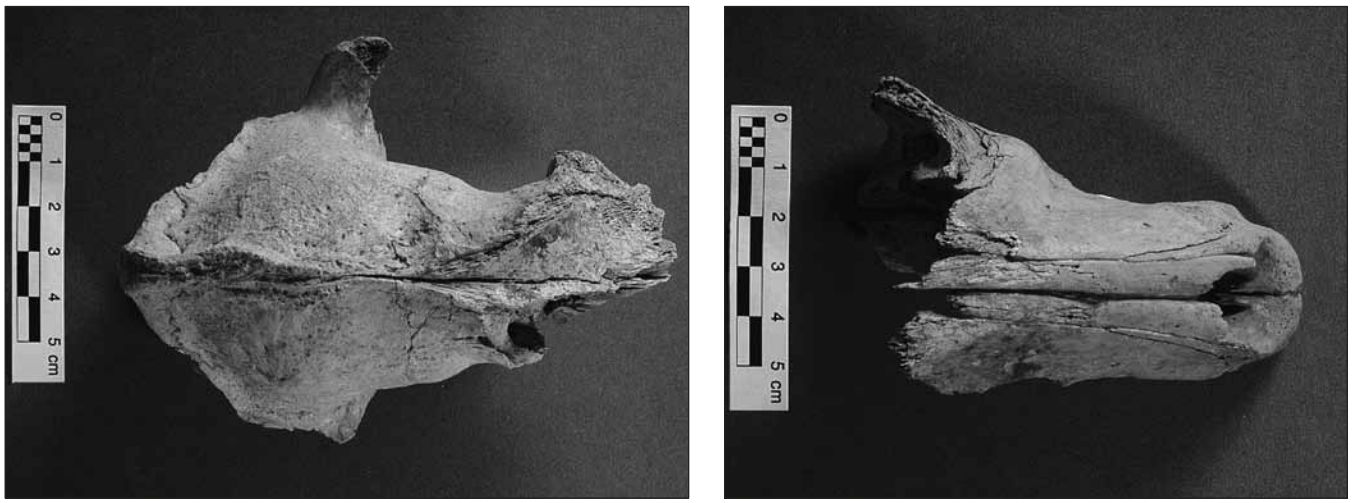

Figure 3: "Lost Dog" skull in two pieces, from 49-CRG-585. Photo by J. McSporran.

surface of the shallow cave, suggesting one complete individual skeleton was present. The skull and two foot bones (complete R metatarsal IV and R metacarpal IV, proximal half) plus three incomplete ribs, a metapodial shaft fragment, and the distal half of a right ulna were removed for evaluation. The skull was sent to Susan Crockford in 1997, who determined it was within the size and shape range of an aboriginal dog and could be of precontact origin. In May 2009, Baichtal and Forest Service archaeologist Risa Carlson returned to the site and recovered a number of additional elements, some from the surface and others shallowly buried in the cave soil (<10 cm deep). No artifacts or other indications of human use or occupation were recovered, although the deposits were not excavated.

Six additional measureable elements were recovered: right humerus, left scapula, atlas vertebra (C1), two thoracic vertebrae (T10 and T12), and an upper left premolar tooth (P^4). Also recovered were an eroded left humerus (proximal end missing), an eroded left innominate (all edges missing), the distal half of an eroded right femur shaft, and two fragments of a right mandible (one fragment from the nuchal end—the condyle plus angular processes, and one from the nasal end—the mandibular symphysis with canine and incisor tooth sockets). An undetermined metapodial shaft fragment (eroded), a rib fragment and one complete rib were also recovered. The complete rib was submitted for radiocarbon dating. Altogether, thirteen elements plus the skull were recovered, representing all major body parts (head, front limbs, hind limbs, and trunk) without duplication. In addition, all epiphyses and sutures were at the same developmental stage, which together suggests strongly that a single individual was present. The investigation has not determined whether this animal had sought refuge in the cave of its own volition and subsequently died (as was originally assumed, hence "Lost Dog Cave") or if it had been deliberately placed in the cave as a ritual interment; either scenario seems possible.

The skull was broken into two well-preserved halves that could not be securely mended because of missing fragments and deformation of the bone (Fig. 3). Several approximate length measurements were taken and a few other standard dimensions were recorded (Table 3). The only tooth retained in the skull is a left upper premolar (P^2) with moderate wear, similar to that seen on the loose P^4. The alveolus for the left first premolar (P^1) is absent (congenitally unformed) while the alveolus for the right P^1 is present. Measurements for the postcranial elements are presented in Tables 4 and 5. The skull and metapodial dimensions are closest to the means of Crockford's village dogs while the humerus and scapula are closer to wool dog means. We conclude that this animal was either a small village dog with shorter legs than usual or a cross between the two types (a hybrid village dog crossed with a wool dog). At least one example of a similar "mixed type" individual occurred in the south coast dog data set, for a dog represented by multiple elements suitable for height estimation (Crockford 1997:88).

Based on conformation of the frontal bones and sagittal crest (Shigehara et al. 1997:117), the dog appears to be male and epiphyseal fusion of long bones and fusion of cranial bones indicate the animal was a mature adult, with tooth wear and development of the sagittal crest on the skull suggesting it was perhaps two to three years old. The shoulder height estimate for the living animal, calculated on the total length of the right humerus using published formulae (Clark 1995; Crockford 1997:88), is 48 cm and, thus, the animal could best be described as a small village dog (cf. reported range of the village dog is 47–59 cm, mean, 52 cm).

The dated rib sample returned an age estimate of 2450 ± 40 RCYBP (Beta-260221), equivalent to a conventional date of 2620 ± 40 BP and a calibrated range of 2780–2720 cal BP (830–770 BC). The $^{13}C/^{12}C$ isotope ratio of –14.4‰, however, suggests that the dog consumed marine foods such as salmon or seal meat and that the date must be adjusted for marine reservoir effects (Cannon et al. 1999; Ramsey et al. 2004; Southon and Fedje 2003). The "Lost" dog's diet was more marine than that of a dog found in K1 Cave on Haida Gwaii (–11.8‰; Ramsey et al. 2004:108) and of fourteen of the fifteen dogs sampled from Namu (with a range of –13.7‰ to –12.2‰; Cannon et al. 1999:403). One Namu dog's isotopic ratio was the same as that of the "Lost" dog. If the "Lost" dog's diet was fully marine, then the adjusted age is 1850–1690 cal BP; if the diet was 75% marine, the age is 2000–1870 cal BP.[3]

The location of Lost Dog Cave is unusual for a southeast Alaskan archaeological site, as it is more than four km from the nearest saltwater shoreline. Although Prince of Wales Island has experienced dramatic sea level changes

3 Nitrogen isotope values would also be useful here, but are not available. Marine reservoir effect adjustments were made using the University of Washington Quaternary Isotope Lab's Calib 5.0, with the local reservoir effect estimated at 280 ± 50 years (Hughen et al. 2004; Moss et al. 1989:537–538; Reimer et al. 2004; Stuiver and Reimer 1993).

Table 3: Lost Dog cranium (Figure 3) and tooth measurements (mm) compared to the means of south coast dogs (Crockford 1997:23–24). Measurements follow von den Driesch (1976).

Cranium	#1	#2	#3	#12	#17a	#23	#25	#29	#35
Left	187*	177*	160*	83.1	41.9	65.3	35.5	51.6	34.5
Right		176*	166*			64.9	35.5		35.5
Village dog means	188.6	172.1	162.8	79.5	42.3	66.2	36.9	54.9	33.9
Wool dog means	162.0	154.6	146.3	68.5	39.1	60.3	33.7	52.2	32.7

* approximate

Table 4: Lost Dog limb element measurements (mm) compared to the means of south coast dogs (Crockford 1997:48, 49, 68). Measurements follow von den Driesch (1976).

Element	GL	Dp	Bd	SD	HS	GLP	SLC
R. humerus	148.7	37.9	30.0	12.5			
L. scapula					119*	27.8	25.0
Village dog means (both)	161.3	41.8	32.6	12.5	134.8	31.2	25.7
Wool dog means (both)	143.5	37.0	29.2	11.7	117.4	27.1	23.4
R. MT IV	69.7		7.1				
Village dog means	73.1		8.0				
Wool dog means	65.0		7.0				

* approximate

Table 5: Lost Dog vertebrae measurements (mm) compared to the means of south coast dogs (Crockford 1997:73, 78). Measurements follow von den Driesch (1976).

Element	GL	LAd	PL	BFcd	HFcd
Atlas (C1)	39.5	16.0			
Thoracic 12			19.9	17.4	11.4
Village dog means	37.2	15.6	20.5	20.1	10.7
Wool dog means	35.5	13.6	18.7	18.5	10.0

Key to Measurements Reported

Cranium	Measurement definitions
#1	Total length
#2	Condylobasal length
#3	Basal length
#12	Snout length
#17a	Length of premolar tooth row (P^2–P^4)
#23	Greatest mastoid breadth
#25	Greatest breadth occipital condyles
#29	Greatest neurocranium breadth
#35	Least palatal breadth
Mandible	
#1	Total length
#2	Angular process-infradentale
#3	Indentation between condyle process and angular process-infradentale
#4	Condyle process-canine alveolus (aboral)
#7	Tooth row length to aboral canine
#8	Length P_1–M_3
#9	Length P_2–M_3
#10	Molar row length
#18	Height vertical ramus
#19	Height of mandible below M_1
Limb bones	
GL	Greatest length
Dp	Greatest depth, proximal end
Bd	Greatest breadth, distal end
SD	Smallest breadth of diaphysis
HS	Height along the spine
GLP	Greatest length glenoid process
SLC	Smallest length of the neck
Vertebrae	
GL	Greatest length
LAd	Length of the dorsal arch (atlas)
PL	Physiological length of the centrum body
BFcd	Greatest breadth centrum, caudal surface
HFcd	Greatest height centrum, caudal surface

since the Late Pleistocene, sea levels during this most recent period would not have been much different than today (Baichtal and Carlson 2010). This interior location may have been positioned along an overland route between Coffman Cove on the northeastern shore of Prince of Wales Island up Sweetwater Lake, Logjam Creek, to the Naukati drainage, and eventually, to the head of Naukati Bay on the northwest side of Prince of Wales Island. Perhaps a cross-island trail connected people from different villages and fish camps in the northern quadrant of Prince of Wales Island. Alternatively, such an interior location may have been a place used for inland hunting or trapping. As mentioned earlier, whether the dog found at site 49-CRG-585 was lost or not will require more investigation of the cave, its contents, and its context.

KUSHTAKA CAVE, 49-PET-410

This cave is located on the east side of El Capitan Passage on the northwest side of Prince of Wales Island (Heaton and Grady 2003). Paleontologist Timothy Heaton visited the cave in 1995 and collected three dog bones from the surface near the cave entrance. These included a lumbar vertebra (L7), a molar (M^1), and a front foot bone (metacarpal II). All appear to have come from fully adult animals (based on complete epiphyseal fusion on the vertebra and metacarpal, and the enclosed roots on the tooth) and probably represent one individual. Heaton measured the metacarpal specimen as 53.5 mm long (GL, greatest length), which puts this individual firmly in the village dog category, the larger of Crockford's two dog types.

Shoulder height for the living animal, calculated on the total length of metacarpal II using published formulae (Clark 1995; Crockford 1997:88), is 49 cm, somewhat below the mean for this type. The remains have not yet been dated. A few artifacts were found in the cave, although no indications of human habitation were found. Three dates on bones of black bear, *Ursus americanus,* also found on the surface, attest to the antiquity of animal use of this cave: 2960–2840 cal BP (2790 ± 60 RCYBP; CAMS-27263), 9630–9540 cal BP (8630 ± 60 RCYBP; CAMS–24967) and 10,710–10,290 cal BP (9330 ± 155 RCYBP; AA18451R; Heaton and Grady 2003:28; calibrations performed using Calib 5.1, assuming terrestrial diet; following Heaton 1995). Like the animal recovered from Lost Dog Cave, this individual may have sought shelter in the cave while sick, injured, or lost, or it may represent a deliberate ritual interment.

CAPE ADDINGTON ROCKSHELTER, 49-CRG-188

This archaeological site is located on the southwest side of Noyes Island and was excavated in 1996 and 1997 (Moss 2004). The archaeological deposit occurs within a wave-cut rockshelter along the side of a rocky headland. The site dates range from 2070 ± 80 RCYBP to 560 ± 60 RCYBP (ca. 2000–300 cal BP), indicating about 1600–1700 years of occupation. Dog remains were not common at this site but a few were recovered.

Three canid bones were identified as *Canis* sp.: a rib, a premolar, and a tail vertebra (Moss 2004:182). These are almost certainly dog, as coyote (*Canis latrans*), the only other dog-sized canid in North America, does not occur in this region. While wolves do inhabit these islands, wolf (*Canis lupus*) skeletal elements are considerably larger than aboriginal dogs of any kind, as Fig. 4 illustrates. Without a wolf skeleton with which to compare the precontact canid remains, however, Moss originally opted for a family level identification. The rib was found on the surface, while the tooth was found in Stratum IIIb (dated to 1500–1090 cal BP), and the vertebra in Stratum Vd (dated to 1490–1290 cal BP).

One additional bone, an incomplete mandible, was identified as dog (Fig. 5). It was excavated from a level dated 1170–1030 cal BP. This specimen is clearly an adult dog and measurements (Table 6) place it squarely into

Figure 4: Precontact aboriginal dogs from the Northwest Coast are significantly smaller than coastal wolves, as this comparison of left mandibles shows. The upper specimen is dog (classified as a small wool dog type), with a wolf below. Both specimens are from the late pre-contact Ozette Village site (45-CA-24) on the Olympic Peninsula, WA (Crockford 1997:12). Photo by H. Moffat.

Figure 5: The partial left mandible of a small dog, classified as a wool dog type, recovered from Cape Addington Rockshelter (49-CRG-188). There were no teeth associated with this specimen.

Table 6: Cape Addington mandible (Fig. 5) measurements (mm), compared to the means of south coast dogs (Crockford 1997:42–43). Measurements follow von den Driesch (1976).

Mandible, side	#7	#8	#9	#19
Left	69.1	65.5	60.9	21.7
Village dog means	78.4	76.4	70.0	24.2
Wool dog means	70.1	68.6	63.4	21.4

Crockford's wool dog category, with all of its measurements falling below the mean calculated for south coast wool dogs, even though it was not possible to estimate individual shoulder height. Cape Addington Rockshelter was interpreted as a seasonal campsite, used during the spring and summer to obtain deer, halibut, salmon, Pacific cod, marine mammals, and seabirds (Moss 2004; Moss et al. 2006). The rockshelter itself may have been used to process and smoke cod, salmon, and halibut (Moss 2004; Smith 2008; Smith et al. 2011). Dogs may have been used to hunt deer that were brought back to the site, and considerable chewing and gnawing by dogs is evident on the deer and marine mammal bones found here (Moss 2004:189–190). (Gnawing by canids is generally distinguishable from other types of damage to bone caused by animals.) The relative scarcity of dog remains in the deposit may reflect short-term seasonal use of this rockshelter by a small group of people.

COFFMAN COVE SITE, 49-PET-067

Coffman Cove is located on the northeast shore of Prince of Wales Island, in a setting well-protected along the inside waters of Clarence Strait. The site has been known since 1970 and has suffered continuous loss due to logging camp, road, residential, municipal, and other construction over the last fifty years. The site was tested in the 1970s, and in 1993, 1998, and 2006 (Clark 1979, 1981; Moss 2011a; Moss et al. 2008; Reger 1995; Rushmore et al. 1998). The dates for 49-PET-067 range from 5500 to 700 cal BP. A total of fifty-eight dog remains were reported (Moss 2008) but when the specimens were re-examined in 2009, one specimen (a right premaxilla fragment) was found to be harbor seal, *Phoca vitulina,* bringing the actual total to fifty-seven (Table 2). Most specimens were not measureable because they were either fragments, isolated teeth, or other elements not covered in Crockford's south coast study. At least seven specimens represented juvenile animals, one probably an unweaned puppy, evidence that the dogs came from a locally breeding population.

Three specimens were measured for this study. One was a complete mandible (Fig. 6) with four retained teeth, the first two molars and the first two premolars. Measurements indicate (Table 7) that this animal was a large village dog type. The greatest length of an intact left metacarpal IV (59.2 mm) falls within the range given for the village dog type and generates a shoulder height estimate of 47 cm.

Figure 6: The complete right mandible recovered from Coffman Cove Site, 49-PET-067, classified as a village dog type. The first two molars and the first two premolars are present and show slight to moderate wear.

Table 7: Coffman Cove Site (49-PET-067) mandible (shown in Figure 6) measurements (mm) compared to the means of south coast dogs (Crockford 1997:42–43). Measurements follow von den Driesch (1976) (see key on page 55).

Mandible, side	#1	#2	#3	#4	#7	#8	#9	#10	#18	#19
Right	142*	144*	137.7	125.2	80.7	73.6	68.9	34.0	60.0	28.1
Village dog means	138.8	139.2	133.3	120.5	78.4	76.4	70.0	35.2	56.5	24.2
Wool dog means	121.6	120.9	117.3	105.0	70.1	68.6	63.4	32.7	49.1	21.4

* approximate

The greatest length of an intact left metatarsal III (74.2 mm) falls at the high end of the range for the village dog type and generates a shoulder height estimate of 55 cm. This metatarsal had a few shallow cuts on the dorsal surface of the shaft, which could be skinning marks. Thus, all three measureable elements from the Coffman Cove Site are large, i.e., the size of village dogs. The metacarpal (MCIV) has an associated date of 3510–3300 cal BP, while the other two specimens have an associated date of 3800–3720 cal BP, making these the oldest specimens in our sample. Chewing and gnawing by dogs on deer and marine mammal bones is common in the 49-PET-067 assemblage. The most abundant vertebrate remains found at the site were those of salmon, leading to the inference that the site was occupied in the late summer and fall (Moss 2011a). Abundant remains of shellfish and other vertebrates suggest that at some times over the course of its long history of occupation, the Coffman Cove site may have been occupied for multiple seasons, i.e., on a sedentary or semi-sedentary basis. That dogs were a regular presence at the site seems consistent with other long-term settlements on the Northwest Coast, such as Namu, British Columbia.

Figure 7: Thoracic vertebra #13 from the Coffman Cove Ferry Terminal Site 49-PET-556 (PL, 21.2 mm) on the left, classified as a small wool dog, compared to the same element from a very small south coast wool dog type (St. Mungo Cannery site, DgRr 2, specimen SM89:0400).

COFFMAN COVE FERRY TERMINAL, 49-PET-556

Site 49-PET-556 is located just 600 meters away from the Coffman Cove site described above. The site was discovered in 2005 during construction of the inter-island ferry terminal, hence its name. In September 2006, Northern Land Use Research archaeologists excavated the site (Reger et al. 2007). The dates for this site span the period from ca. 3000 to 2000 cal BP. There were nineteen dog bones identified (Moss 2007a). Only two bones were measureable, both recovered from a layer dated to 2330–2130 cal BP: an intact thoracic vertebra (T13) and the distal end of a right humerus.

The vertebra T13 (Fig. 7), based on its greatest centrum length (PL, physiological length, 21.2 mm), appears to have come from a small wool dog type (Crockford 1997:79). In contrast, while the distal end of the humerus had been chewed, making it necessary to estimate the breadth measurement (Bd, greatest breadth, distal end, 31.2 mm), it appears to have come from a large village dog type (cf. Crockford 1997:49). This humerus specimen is similar in size to the humerus recovered from Lost Dog Cave, which was also classified as a large village-type dog. The Coffman Cove Ferry Terminal specimen was recovered along with the shaft of a radius and the proximal end of an ulna (plus several fragments of these), so it is possible that the entire limb was present, suggesting it may represent a disturbed dog burial. The Coffman Cove Ferry Terminal site vertebrate assemblage contained abundant Pacific cod remains, leading Moss (2011b) to infer primary occupation during spring.

SUMMARY AND DISCUSSION

For the first time, precontact domestic dog remains are described in detail from five locations on the Prince of Wales Archipelago, Southeast Alaska. The dog remains from Lost Dog Cave represent a complete individual and it is likely that the three bones recovered from Kushtaka Cave also came from a single individual. Both of these dogs were the size of south coast village dogs and it is possible, although not confirmed, that these were deliberate interments. More work on the depositional context of both of these dog specimens is warranted.

The sites from which the Prince of Wales dog remains were recovered span a time period of ca. 3800–1000 cal BP. While more sites of this age and older exist on Prince of Wales Island (Baichtal and Carlson 2010; Dixon 2008; Kemp et al. 2007), no other excavated sites of any age have dog remains that have been measured. The vertebra recovered from the Coffman Cove Ferry Terminal site, which came from deposits dated to 2330–2130 cal BP, is the oldest representative of the small, wool dog type. The only other dog specimen determined to be wool dog-sized was the partial mandible from Cape Addington, which was recovered from a level dated to 1170–1030 cal BP. Village dog type remains were recovered from all other contexts, with the specimens from the Coffman Cove site being the oldest with a maximum age of 3800–3720 cal BP.

Although sample sizes are small, the set of dog remains described here suggests that Prince of Wales Archipelago dogs ranged in size as much as dogs from similar-aged coastal sites in southern British Columbia and western Washington. Small, wool-type dogs have an antiquity on the south coast of at least 4,000 years although they do not appear to be widespread and common until the most recent period, ca. 1000 BP to the late AD 1700s (Crockford 1997). We emphasize that the presence of the small wool-type dog does not imply that the Tlingit and their ancestors bred and raised small dogs in the ways that the Coast Salish and Makah did. Although this may have occurred, the extant evidence is far too limited to make such a proposition. Comprehensive analysis of additional dog remains from all over Southeast Alaska will be needed to determine if the pattern described for the southern Northwest Coast prior to European contact can be found elsewhere.

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