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PREHISTORIC OCCURRENCE OF PINNIPEDS IN THE LOWER COLUMBIA RIVER

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ABSTRACT—Harbor seals (*Phoca vitulina*) were observed in the Columbia River from its mouth to Celilo Falls, 324 km upstream, during the 19th and early 20th centuries. Archaeological collections of mammal remains recovered from sites downstream of Celilo Falls contain bones and teeth of harbor seal and of unspecified phocid and pinniped. These remains represent pinnipeds procured from the Columbia River rather than ones traded inland from the coast. Harbor seals were in the lower Columbia River between about 10,000 and 6000 yr ago, and also after 1000 yr ago.

Key words: harbor seal, *Phoca vitulina*, Columbia River, prehistoric occurrence

When Lewis and Clark's Corps of Discovery reached Celilo Falls on the Columbia River, in late October 1805, it still had 324 km to go before reaching the mouth of the river and the Pacific Ocean. In his journal entry for February 23, 1806, Clark noted that he had observed "great numbers" of "Phosia or (harbor) seal" (*Phoca vitulina*) below the falls in October, and that the Corps had also seen this seal "from the Great Falls of the Columbia to the mouth" (Moulton 1988, p 327; 1990, p 340). Alexander Henry reported that 5 Steller sea lions (*Eumetopias jubata*) were killed 70 km upstream of the Columbia River mouth in 1814 (cited in Bailey 1936, p 330). Weed (1936) reported a male Steller sea lion was found on a stem of the Willamette River 150 km upstream of the Columbia River mouth in the 1930s. Scheffer and Sperry (1931) collected a harbor seal 25 km upstream of the mouth in the late 1920s and Bailey (1936, p 335) reported that harbor seals were observed "by many travelers in the Columbia River up to The Dalles" (308 km from the mouth) after the Corps of Discovery expedition. In this paper, we summarize archaeological data from the Lower Columbia River Region, show that phocids were in the river during much of the last 10,000 yr, and argue that these taxa did not occur upriver farther than Celilo Falls.

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METHODS

We reviewed published and unpublished reports and our own data on faunal remains recovered from archaeological sites adjacent to the river in what is known as the Lower Columbia River Region. This region extends from approximately the mouth of the Snake River in Washington State to the mouth of the Columbia River (Fig. 1). We compiled data on the location of sampled sites along the floodplain in the region, the number of mammalian remains identified to at least taxonomic family in each collection, and the age of the remains as determined by stratigraphically associated radiocarbon dates or temporally diagnostic artifact styles. Site locations were determined as Columbia River kilometers (RK) from the mouth based on topographic maps. All ages reported here are in radiocarbon years before the present. Our sample comprises data from 9 sites downstream and 10 sites upstream of Celilo Falls (Table 1, Fig. 1). We include only those site-specific samples that have produced >20 mammalian specimens (irrespective of taxon) identifiable to family, genus, or species, as well as all samples containing remains of sea mammals known to us. Results are presented in order from oldest to youngest pinniped remains.

RESULTS

Cressman (1960) reported that remains of 6 individual "phocids" were identified in a sample of unknown size and comprising various

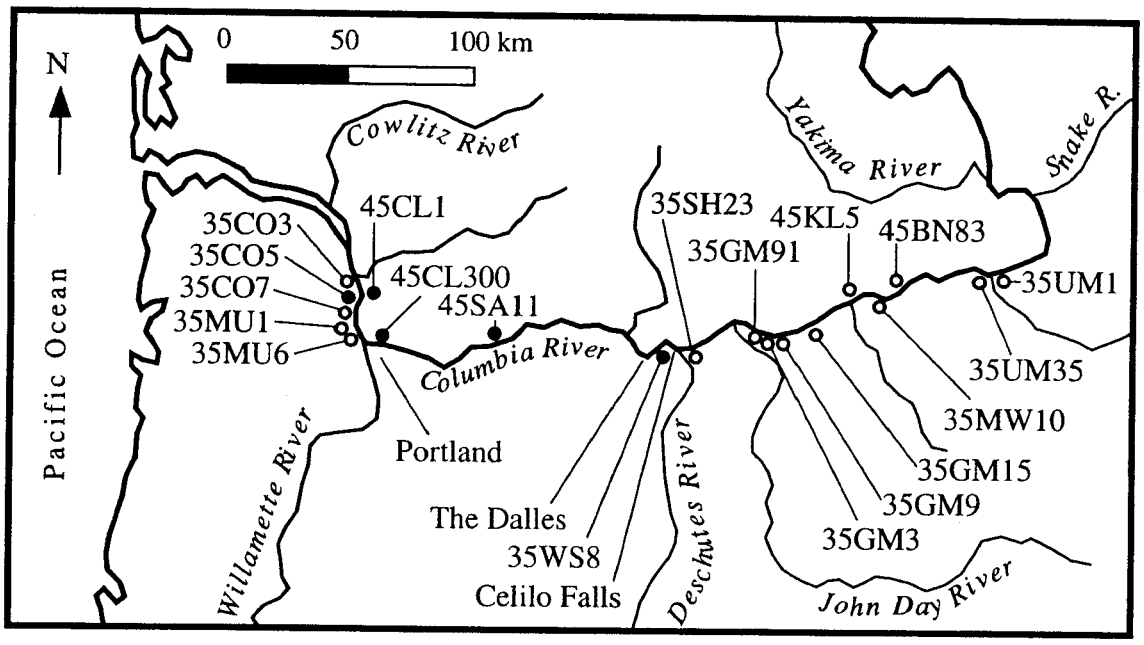

FIGURE 1. Lower Columbia River Region of Washington and Oregon, showing approximate locations of archaeological sites and modern cities mentioned in the text. Open circles represent sites with no pinniped remains; filled circles represent sites containing pinniped remains.

mammalian taxa recovered from the Roadcut Site (35WS8; RK 314; Fig. 1). The phocid remains were distributed across 3 strata. Stratum I was deposited about 9800 yr ago and contained the remains of 2 phocids. Stratum II was deposited about 7700 yr ago and contained the remains of 3 phocids. Stratum IV was deposited between 6000 and 7500 yr ago and contained the remains of 1 phocid. These specimens represent the oldest remains of sea mammals on the Columbia River known to us. They establish that phocids were in the river during the first 4000 yr of the Holocene epoch that began 10,000 yr ago. Only 2 species of Phocidae, the harbor seal and the northern elephant seal (*Mirounga angustirostris*), are known to occur on the Washington and Oregon coast historically (Bailey 1936; Dalquest 1948) and prehistorically (Lyman 1988). Because elephant seals are not known to move up freshwater rivers whereas harbor seals are (Bailey 1936 and references below), we presume the remains reported by Cressman (1960) represent harbor seals.

We have identified 13 specimens of harbor seal in a sample of 2000 mammalian specimens identified to genus and recovered from the prehistoric Indian village of Cathlapotle (45CL1; RK 125; Fig. 1). Faunal remains from this site date between approximately 1150 AD and 1670 AD (Ames and others 1996). To date, approximately 25% of the total collection of mammal remains from Cathlapotle has been examined. We anticipate that more harbor-seal remains will be found when the entire collection has been studied.

Saleeby (1983) identified 3 specimens of harbor seal in a collection of 543 bones and teeth of various mammalian taxa recovered from the Meier Site (35CO5; RK 130; Fig. 1). One of us (RLL) studied a much larger collection from this site recovered between 1987 and 1991 and identified 6421 bones and teeth of various mammalian genera. Of those remains, 40 bones and teeth deposited between 1300 AD and 1800 AD (Ames and others 1992) were identified as harbor seal.

A single specimen identified as "*Phoca*" reported by Dunnell and Whitlam (1977) was recovered in the 1970s from 45SA11 (RK 200) near modern Bonneville Dam (Fig. 1). It and 142 specimens of various mammalian taxa were deposited between about 1810 AD and 1900 AD. A sample of 8577 mammalian bones and teeth identified to taxonomic family recovered in the 1980s from 45SA11 (Table 1) includes 54 specimens identified as "Pinniped" (Minor and others 1989). Some of these remains may date to as early as 1485 AD (Minor and others 1986).

TABLE 1. Archaeological sites and collections in the Lower Columbia River Region downstream of Celilo Falls that have produced identified mammalian (all taxa) remains. Sites (see Fig. 1 for locations) are listed in chronological order.

Site	Pinniped remains present(p) or absent(a)	Age (years ago)	Reference
35WS8	p	9800–6000	Cressman 1960
35CO3	a	2600–1800	Saleeby 1983
35MU1	p	1800–750	Saleeby 1983
45CL1	p	900–400	this report
35CO7	a	750–170	Saleeby 1983
35CO5	p	700–200	Saleeby 1983; this report
45SA11	p	500–100	Dunnell and Whitlam 1977; Minor and others 1989
35MU6	a	250–170	Saleeby 1983
45CL300	p	150	Thomas 1987

A single harbor-seal humerus identified by RLL was recovered from deposits comprising a portion of the historic Fort Vancouver site (45CL300; RK 153) located in modern downtown Vancouver, Washington (Fig. 1). This humerus and 2 dozen other mammalian remains stratigraphically associated with it were deposited about 1840 AD (Thomas 1987).

The harbor seal is the only species of pinniped identified among archaeological collections. Over 100 bones and teeth of pinnipeds have been identified among the approximately 18,000 mammalian specimens recovered from 9 sites downstream of Celilo Falls. No pinniped remains have been identified among 8028 identified bone and tooth specimens recovered from 10 sites upstream of Celilo Falls (Fig. 1).[2] We believe the absence of pinniped remains from locations upstream of Celilo Falls is not a function of sampling, given the large sample of identified mammalian remains from that area, and that the absence indicates that members of this taxon were unable to ascend the falls, just as is documented in the 19th century.

DISCUSSION

The phocid remains reported by Cressman (1960) and recovered from 35WS8 (RK 314) are the farthest upstream of any pinniped remains yet reported from an archaeological context. This site is about 10 km downstream of Celilo Falls (RK 324), where Clark observed harbor seals in 1805. It is adjacent to the head of Five Mile Rapids (also known as the "Long Narrows") that extended upstream from modern The Dalles Dam (RK 311). Aboriginal fishing took place along this entire complex upstream to Celilo Falls (Hunn 1990), and phocid remains from 35WS8 may represent individuals taken by prehistoric fishermen from Five Mile Rapids.

There is no evidence suggesting any of the remains discussed here were obtained through trade from Native Americans who procured the pinnipeds from the ocean coast. Ethnographic and ethnoarchaeological data indicate only skeletal parts of high socioeconomic value were traded over significant distances (Lyman 1994). The skeletal parts of harbor seals from 35CO5 and 45CL1 that we have examined are of varied socioeconomic value and represent all parts of the skeleton. These facts suggest the parts were not traded into the area from the coast but rather represent an occasional seal taken from the Columbia River near the sites. The skeletal parts represented at other sites are not reported in the literature we examined.

Ethnographic data are unclear as to how pinnipeds were exploited along the Lower Columbia River by indigenous peoples (Spier and Sapir 1930; Ray 1938). There is no ethnographic data indicating prehistoric humans occupying the river banks intentionally hunted seals; only those peoples quite near the mouth of the river are reported to have done so (Ray 1938). Along the Lower Columbia much salmon fishing was done with traps, harpoons, and various nets;

[2] The 10 sites and pertinent references are: 35SH23 (Cole 1967a, 1969), 35GM91 (Schalk 1987), 35GM3 (Cole 1965), 35GM9 (Cole 1964, 1967b, 1968a, 1968b), 35GM15 (Cole 1965, 1966, 1967b), 45KL5 (Cole 1965, 1966, 1967b), 35MW10 (Cole 1968b), 35BN83 (Cole 1968b), 35UM35 (Cole 1966), 35UM1 (Schalk 1980).

dip nets were extensively used at Celilo Falls (Spier and Sapir 1930). Seals may have been caught occasionally in a dip net or harpooned when entangled in or swimming near seine nets and fish traps erected by prehistoric fishermen.

During the late 19th and early 20th centuries, the population of harbor seals along the Oregon and Washington coast was significantly reduced (Pearson and Verts 1970), although this trend appears to have reversed during the late 20th century (Harvey and others 1990). Harbor seals were not seen as far upstream as Celilo Falls during the early 20th century, although they were observed "occasionally in the lower part of the river" (Bailey 1936, p 335). The pinniped remains recovered during archaeological excavations and described above reveal that harbor seals ascended the Columbia River to at least the vicinity of Portland, Oregon, over the last 1000 yr. They may have gone upstream as far as Celilo Falls throughout much of the Holocene epoch.

California sea lions (*Zalophus californianus*), Steller sea lions (*Eumetopias jubatus*), and harbor seals are occasionally found today in rivers significant distances upstream of salt water (for example, Weed 1936; Spalding 1964; Paulbitski 1974). Some research indicates that pinniped abundance in rivers corresponds with abundance of salmonids, although most pinniped predation is on the slower moving Pacific lamprey (*Lampetra tridenatus*) (Jameson and Kenyon 1977; Roffe and Mate 1984). We suggest that the pinnipeds represented by the archaeological remains discussed above were also pursuing salmonids and lamprey as these animals moved up the Columbia River. The phocid remains from 35WS8 are stratigraphically associated with numerous remains of salmonids (Cressman 1960). Most other sites downstream of Celilo Falls and listed in Table 1 also contain numerous salmonid remains, suggesting that salmonids and other potential prey of harbor seals were in the Lower Columbia River within a few thousand years of the last major glacial-age Spokane flood, about 13,000 yr ago (Baker and others 1987).

We believe that the absence of pinniped remains from sites 35CO3, 35CO7, 35MU1, and 35MU6 is a function of the facts that these sites are not located on the mainstem of the Columbia River but rather several kilometers away on the floodplain and that the samples are relatively small. The absence of pinniped remains dating between approximately 6000 and 1500 yr ago may be a function of the fact that no faunal remains dating to this period have been collected. Alternatively, this absence may be a function of the mid-Holocene climatic interval known as the Altithermal, which dates between about 8000 and 4000 yr ago (Chatters 1998). This period is characterized by lower than modern stream levels, and computer simulations suggest that salmon runs during this climatic interval would have been significantly smaller than those documented during the 19th and early 20th centuries (Chatters and others 1991; Neitzel and others 1991). Collection and study of faunal remains dating to the Altithermal are necessary to determine if harbor seals or other pinnipeds were present in the western half of the Lower Columbia River Region throughout the Holocene.

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