

## Faunal Remains from the Loyalist Occupation of the Bliss Islands, Quoddy Region, New Brunswick

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*During the summer of 1992, a remarkably undisturbed, single-component Loyalist occupation, dating A.D. 1783 to ca. A.D. 1803, was excavated on the Bliss Islands, Quoddy Region, New Brunswick. The Loyalist site (BgDr-66) is believed to represent the homestead of Samuel Bliss, for whom the islands are named. It contains a substantial, diverse and well-preserved faunal assemblage, which shows that, while the occupants raised several species of domestic animals on the islands, and exploited a variety of vertebrate and invertebrate species from the adjacent waters, they apparently hunted neither marine nor terrestrial mammals. The site and the faunal assemblage afford a view of Loyalist life that is different from the predominantly political and genealogical perspectives of the historic records, and that contrasts with what might be expected based on a knowledge of local biogeography, faunal assemblages from Native archaeological sites, and recent subsistence and commercial activities on the islands.*

### Introduction

Since 1983, the primary author has been conducting long-term research into the human ecology and cultural history of the Quoddy Region, Charlotte County, New Brunswick. Much of this work has focused on the archaeological site inventory of the Bliss Islands group (Black 1985, 1987, 1988). The early phases of the project addressed prehistoric archaeology and Native adaptations to the islands (e.g., Black 1992).

In 1986, we learned that the islands were named for Samuel Bliss, a Loyalist officer who received them as a land grant at the end of the American Revolutionary War. During the early 1990s, when we expanded the scope of the Bliss Islands Archaeology Project to encompass historic archaeology, looking for evidence of Samuel Bliss's occupation seemed an obvious course of action. This search showed that one of the historic sites recorded during the first season of field work on the islands (Black 1985:22-23), now known as the Loyalist site (BgDr-66), probably represents the location of Bliss's house. The reasoning behind this interpretation is the subject of a forthcoming thesis by Blair.

We directed an excavation at the Loyalist site during the summer of 1992. Perhaps the least expected, and most spectacular, aspect of the

archaeological material we recovered is the faunal assemblage. Our proximate purpose in analyzing this assemblage is to present a perspective on the history of the Loyalist period (A.D. 1783-1819; Ganong 1983:124-134) different from that revealed by historic documents: the perspective of subsistence and day-to-day life, rather than the perspective of political history and genealogy (Black and Blair 1995; Blair and Black 1993). The ultimate purpose of the faunal analysis is to incorporate faunal and subsistence inferences about Loyalist occupations into a long-term perspective on the human ecology of the insular Quoddy Region, spanning the prehistoric and historic periods (that is, an extension of the work reported by Black [1992:95-148]). In this preliminary report, we focus on: 1) the state of preservation of the faunal remains at the Loyalist site; 2) numbers and diversity of species represented in the assemblage, and 3) discussions of some specific, noteworthy faunal specimens. But first, by way of background, we present information about the Quoddy Region, the Bliss Islands, the Loyalist site and the life of Samuel Bliss.

### Background

#### *The Quoddy Region*

The Quoddy Region is a biogeographically

defined marine and coastal region including portions of northern Maine and southern New Brunswick, bounded by the head of tide on the St. Croix River estuary, Point Lepreau, Northern Head on Grand Manan and East Quoddy Head in Maine (Figure 1). The region consists of a complex coastal ecotone and adjacent waters, situated at the confluence of two extensive and dynamic marine systems, the Gulf of Maine and the Bay of Fundy. The insular part of the region consists of the island groups between Passamaquoddy Bay and the Bay of Fundy, most of which are on the Canadian side of the international boundary.

The region is characterized by a temperate continental climate moderated by marine influences, a macrotidal regime with tidal ranges averaging five metres (at neap tides) and reaching eight metres (at spring tides), and high biological productivity resulting from marine upwelling conditions. The region supports large and diverse populations of marine plants, shellfish, vertebrate fish, sea mammals and sea birds; the islands and adjacent mainland areas are dominated by coastal spruce forests and salt marshes that support significant populations of terrestrial animals. Many of these biological resources are subject to subsistence and commercial exploitation; others, such as sea birds and whales, provide the basis for tourism and recreational activities (Black 1992:2-6; Thomas [ed.] 1983).

### *The Bliss Islands*

The Bliss Islands group consists of three islands connected by intertidal zones that form the southeastern boundary of Bliss Harbour, a shallow, sheltered body of water located offshore from Blacks Harbour and the L'etang Peninsula. The islands, which we refer to individually as the northeastern, central and southwestern islands, surround a natural harbour, comprising Fishermans and Pintlowes coves, which opens into Bliss Harbour (Figure 2). They have had various place names in the past: Native people called the islands Seebeskook (meaning "high tide flows through it"). The French named the group the L'etang Islands in the seventeenth century, and this name remained in use until the mid-nineteenth century (Rayburn 1975:57). Early in the nineteenth century, the islands began to be associated with Samuel Bliss, at first unofficially, as Bliss's Island. The northeastern island is sometimes referred to as Pentelows Island, after another mid-nineteenth century landowner (Blair 1991). Here we use the modern, official place name, the Bliss Islands (NTS 1980), throughout, regardless of to which part of the historic period we refer.

For the most part, the interiors of the islands consist of boggy areas and rock outcrops covered by soil veneer supporting dense mixed forest; these habitats support a substantial population of deer. Moose and beaver are occasionally present. Nearshore meadows support small mammals



**Figure 1.** Map of the Quoddy Region showing the locations of places referred to in the text.

such as mink and voles. Reptiles (snakes) are present in small numbers; amphibians are absent.

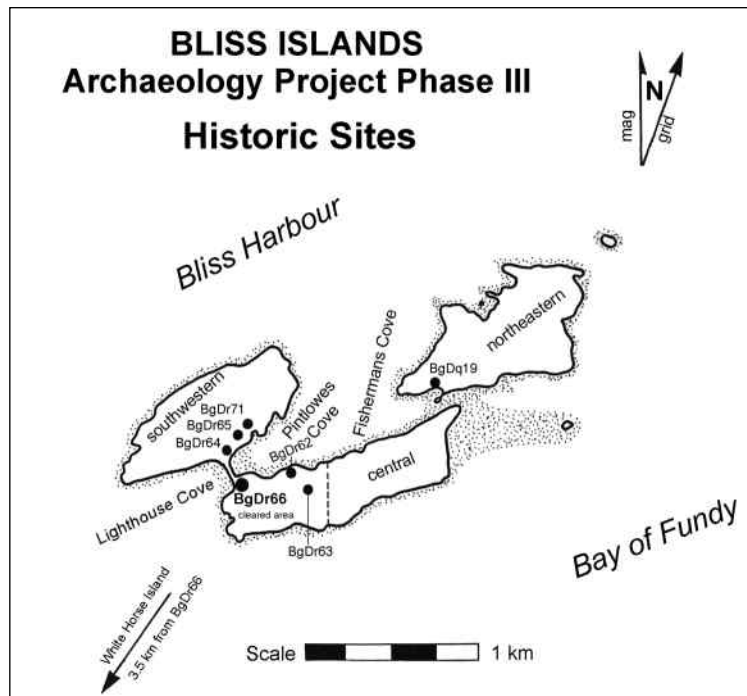
The islands are surrounded by extensive gravel, mud and rock ledge intertidal zones that are exploited for shellfish resources, especially soft-shelled clams and periwinkles. The ledges are favoured hauling-out places for harbour seals, which were much more common in the past, when grey seals were also present (Black 1985:21, 1992:95-100). The marshes and intertidal zones support substantial numbers of migratory birds, shorebirds and raptors. Excavations at Native archaeological sites show that these resources have been present for at least the past two millennia (Black 1992).

At present, the islands are occupied only seasonally, and the main economic activities are aquaculture and weir fishing. In the recent past, weir fishing for herring was the most important activity, and fishing for groundfish and pelagic fish was conducted near the islands. During the nineteenth century, people occupied the islands year-round and some practised mixed fishing/farming subsistence and economic strategies.

The Loyalist site is located at the western end of the central island, which is the only part of the islands with agricultural potential. Here, a glacial deposit covers much of the bedrock, producing patches of arable soil, and the highest quality and most dependable groundwater source. Parts of this area have been cleared often enough, and for long enough, that the vegetation has been deflected from forest to heath, pasture and low scrub. Eighteenth-century inhabitants probably began this clearing, which was renewed and extended by the nineteenth century occupants.

#### *A Brief Biography of Samuel Bliss*

Samuel Bliss was born in 1750, probably in Concord, Massachusetts, and was the youngest son of a prominent Anglican minister. Samuel's brother, Daniel Bliss, held prominent political and social positions in Boston, and eventually, he and his son, John Murray Bliss, held similar positions in New Brunswick. Presumably, Samuel Bliss received the benefit of an education and could have lived a similar lifestyle had he so desired. Instead, he took a rather different course through life than that of his close relatives.



**Figure 2.** Map of the Bliss Islands showing the locations of designated historic sites, including the Loyalist site (BgDr-66), and places referred to in the text.

In 1774, Bliss, who was in his early twenties, moved to Greenfield, Massachusetts, a frontier community 70 km inland from Concord, and 170 km from Boston. There, during 1774-75, he operated a general store and served as captain of a local militia unit. The population of Greenfield was predominantly Patriot, and, whatever his political sentiments when he moved there, Bliss soon became suspected of being a Loyalist. By mid-1775, his situation in Greenfield became sufficiently uncomfortable that he sold the stock in his store and moved to Boston.

In Boston, Bliss accepted a commission as lieutenant in the newly formed Scottish Highland Regiment (later the 84th Regiment of the Royal Highland Fusiliers), and moved to Halifax with the regiment. He was officially banished from Massachusetts and any possessions he left there were confiscated by the Revolutionary Government. From 1776-78, Bliss spent most of his time in Newfoundland, recruiting for the regiment. Later, the battalion of which he was part was stationed at Annapolis, Nova Scotia, for a time. Bliss served as paymaster for the 84th Regiment, and saw action in the southern United States during the Revolutionary War.

Samuel Bliss married Mary Harwood at Halifax in 1779; she gave birth to their first daughter there in 1783. The 84th Regiment was disbanded in October, 1783, with most members receiving land grants in Hants County, Nova Scotia. However, Bliss and some others received grants on the lower Magaguadavic River and the L'etang Peninsula in what is now Charlotte County, New Brunswick. Apparently, Bliss had decided to live on the Bliss Islands even before demobilization, because from July 1783 to March 1784 he travelled between Halifax and the islands, and wintered there with his family and some companions from the regiment; it was during this time that he built his house on the islands.

In 1784, Bliss gave up his grants on the mainland in order to be officially granted the Bliss Islands. This grant was renewed under the New Brunswick government in 1786, when Bliss successfully petitioned to have White Horse Island (a small islet offshore from the Bliss Islands), and

a portion of the L'etang Peninsula (where he had established a lime kiln) included in his grant.

Bliss established a small estate on the islands; documents refer specifically to such activities as clearing, cutting hay and raising sheep and cattle. He also engaged in commercial activity with a schooner he owned. A second daughter was born to the family in 1788.

After 1786, Samuel Bliss effectively disappears from the historic records until his death in 1803. He died intestate, and as a result of legal complications, the islands did not pass out of the Bliss family's hands until 1843 (Blair 1991). Nevertheless, the archaeological evidence suggests that no one from the family, nor anyone else, lived in Bliss's house after his death. Abandoned, the house collapsed, and the site was never re-occupied. Two centuries later, what remains is the barely discernible, rock-filled depression that was recorded as the Loyalist site.

#### *The Loyalist Site*

The Loyalist site consists of an eight by nine metre rock-filled cellar hole and surrounding area located at the western end of the central island, on a low rise above the southern end of the bar that joins the central and southwestern islands (Figure 3). The site is located between the average high-water line (at approximately eight metres above chart datum) and 11 m elevation, and represents the location of a substantial house built against a low bedrock outcrop. The lowest part of the site is now occasionally inundated by extreme high-water events, but in the eighteenth century this area would have been dry land.

The house was probably located to afford views of Pintlowes Cove, Lighthouse Cove, and the approaches to Passamaquoddy Bay. The cellar may have been created by excavating into the rock outcrop and using the stone slabs thus produced to construct the house walls. The fireplace was probably set on the rock outcrop itself. At the northwest corner, there is some indication of an entryway into the cellar. Beyond these observations, we know little about the structure and organization of the house.

We decided to excavate outside the scatter of heavy debris resulting from the collapse of the

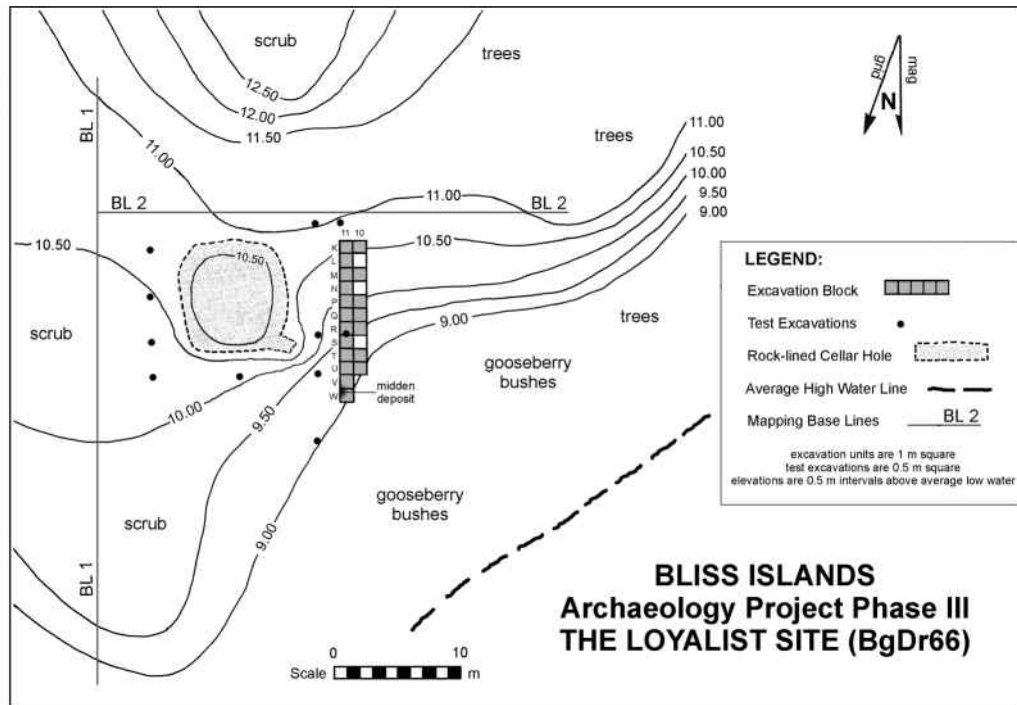


Figure 3. Map of the Loyalist site (BgDr-66) showing the location of the excavation units in relation to the house feature.

house. Test excavations showed that the area with the densest concentration of domestic refuse is to the west. Here, we laid out a grid of contiguous one metre square units to produce a cross-section of the main part of the site, extending from the top of the rock outcrop downslope to the level of the high-water line (Figure 3). In all, an area of 19 m<sup>2</sup> was excavated to depths varying from 20 cm to 80 cm.

The site has been analyzed in terms of five stratigraphic components (see Bishop and Black [1988] and Black [1991] for discussions of how such units of analysis are defined). These are (from the surface to the subsoil): *Stratigraphic Component 5*, comprising brown loamy soil layers that represent soil accumulation from after the collapse of the house until the time of excavation (ca. A.D. 1850-1992); *Stratigraphic Component 4*, which consists of brown loamy soil layers mixed with many rocks, bricks and mortar fragments that represent soil accumulation from the abandonment to the collapse of the house (ca. A.D. 1803-1850) and so include cultural material from the later part of the Loyalist occu-

pation; *Stratigraphic Component 3*, which consists of dark brown loamy soil layers with clay and pebble lenses, and a shell midden deposit, representing the later part of the Loyalist occupation; *Stratigraphic Component 2*, which contains black humic soil layers with sandy lenses (a natural A horizon modified by human activity) representing the earlier part of the Loyalist occupation, and humic soil formation predating human occupation; and *Stratigraphic Component 1*, which represents the glacial deposits and conglomerate bedrock (natural B and C soil horizons) that predate human occupation.

All excavation units and all stratigraphic components at the Loyalist site contain faunal remains. This preliminary report is based on field observations of scattered and concentrated shellfish remains, species identifications of 450 selected pieces of animal bone from throughout the excavation block (Reading 1995), and detailed analyses of 3,022 pieces of animal bone (representing approximately 50 percent of the bone assemblage) from the five deepest excavation units: Q10, Q11, R10, R11 and S11 (Beyea

1997; see Figure 3). What can these faunal remains tell us about the enigmatic last two decades of Samuel Bliss's life?

### The Faunal Assemblage

#### *Preservation and Taphonomy*

The Loyalist site contains a considerable density and diversity of faunal remains (Figures 4-7), representing at least 35, and perhaps as many as 40, species (Tables 1 and 2). The faunal remains are generally, and in some cases remarkably, well-preserved; on several occasions, we recovered groups of articulated mammal bones and fish bones (including vertebrae and fins), and complete shells that had been broken by pressure from overburden but were not laterally dispersed (e.g., Figure 5-7). These observations suggest there was a low level of human traffic over the area excavated during the occupation of the site, and little disturbance of the site by natural or cultural processes, after the collapse of the house.

Root etching and surface erosion of bones are slight to moderate in intensity and occur infrequently. The presence of shellfish probably

played an important role in neutralizing soil acidity and preserving the vertebrate faunal remains.

There is little evidence for burning or heat alteration of the faunal remains. Cut marks from metal knives and chop marks from metal axes occur on many bones, especially those of large mammals, indicating that these animals were butchered on-site. No saw-cut bones have been observed. In some cases, there are spiral fractures on extremity bones of the larger mammals, especially cattle, suggesting marrow extraction. All butchering marks were made by metal blades, indicating that none of the butchered bones pre-date the historic occupation.

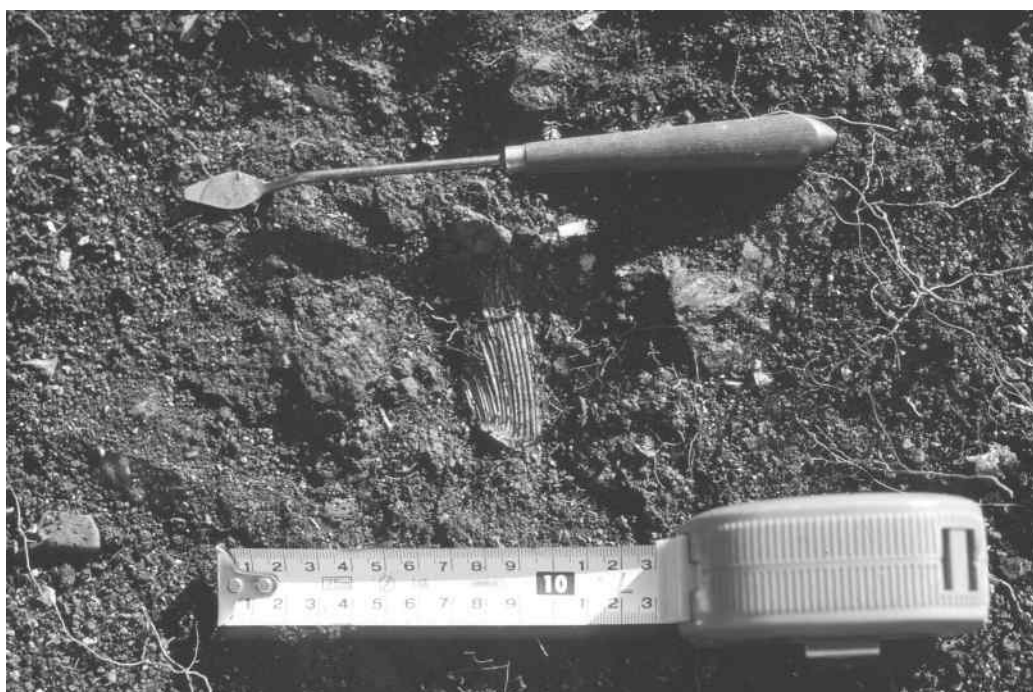
Only two specimens exhibit possible signs of carnivore gnawing. The Bliss family apparently did not keep domestic dogs, or if they did, they expended considerable effort in keeping dogs away from the part of the site we excavated. These observations about the preservation and taphonomy of the assemblage, together with the apparent stratigraphic integrity of the site, suggest that historic sites in the insular Quoddy Region are better preserved than their mainland



Figure 4. Concentration of mammal and fish bones with associated artifacts in Unit Q11, Stratigraphic Component 3.



**Figure 5.** Articulated bovine radius and ulna in Unit S11, Stratigraphic Component 2.



**Figure 6.** Articulated codfish fin bones in Unit P11, Stratigraphic Component 4.

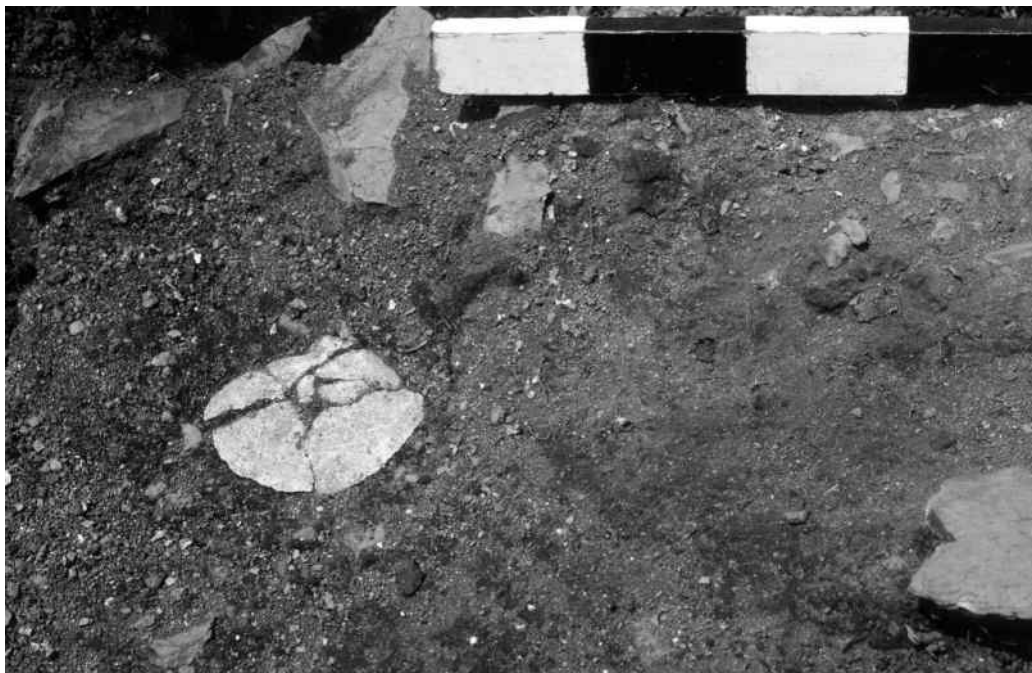


Figure 7. Fractured but undispersed scallop shell in Unit U11, Stratigraphic Component 4.

counterparts, as is the case with Native sites (Black 1992:62).

#### *Invertebrate Faunal Remains*

At least 11 species of marine shellfish are represented at the site (Table 1) as scattered individual shells in most excavation units (e.g., Figure 7), and as a concentrated shell midden deposit located in units V11 and W11 (Figure 3). Soft-shelled clams predominate in the invertebrate remains, but four other species of pelecypods (common mussel [*Mytilus edulis*], horse mussel [*Modiolus modiolus*], deep-sea scallop [*Placopectea magellanicus*] and Arctic saxicave [*Hiatella arctica*]), at least five species of gastropods (northern whelk [*Buccinum undatum*], Stimpson's whelk [*Colus stimpsoni*], ten-ridged whelk [*Neptunea decemcostata*], dogwhelk [*Nucella lapillus*], and periwinkle [*Littorina* sp.]), and at least one species of barnacle [*Balanus* sp.] are present in small numbers. The periwinkles represent the smaller indigenous species (either *Littorina saxatilis* and/or *Littorina obtusata*), rather than the large edible periwinkle (*Littorina littorea*); the latter was introduced into the Quoddy Region after

the Loyalist period (Ganong 1886).

The larger bivalves – clams, mussels and scallops – probably represent human food remains; the larger whelk species also may have been eaten by people. The smaller shellfish, especially barnacles, saxicaves, periwinkles and dogwhelks, may have been brought on-site as byproducts of exploiting the larger species (cf. Black [1993:59] for similar interpretations of small shellfish in prehistoric middens). Any, or all of these shellfish could have been used as bait for fishing large vertebrate fish (see below), rather than directly as human food. Finally, it is possible that some, such as deep-sea scallop valves and large whelks, were collected as dead shells from intertidal zones by the Bliss children and discarded on-site as part of their play activities.

#### *Vertebrate Faunal Remains*

Vertebrate faunal remains include from 9 to 11 species of mammals (four of which are domestic), 12 to 14 species of birds (one of which is domestic), and three to four species of fish (two or three bony fish and one cartilaginous fish). Species designations, numbers of identified specimens and



**Table 1.** *Invertebrate species identified in the Loyalist site faunal assemblage (brackets indicate tentative identifications).*

Class	Order	Family	Genus/species	Common Name
Mollusca	Gastropoda	Thaididae	<i>Nucella lapillus</i>	Atlantic dogwhelk
		Buccinidae	<i>Buccinum undatum</i>	northern whelk
			<i>Neptunea decemcostata</i>	ten-ridged whelk
			<i>Colus stimpsoni</i>	Stimpson's whelk
		Littorinidae	<i>Littorina</i> sp.	periwinkle
	Pelecypoda	Myidae	<i>Mya arenaria</i>	soft-shelled clam
			<i>Hiatella arctica</i>	Arctic saxicave
		Pectinidae	<i>Placopecten magellanicus</i>	deep-sea scallop
		Mytilidae	<i>Modiolus modiolus</i>	horse mussel
			<i>Mytilus edulis</i>	common mussel
Arthropoda	Crustacea	Balanidae	<i>Balanus</i> sp.	barnacle

minimum numbers of individuals are shown in Table 2. Mammal bones account for about 14 percent of the vertebrate subassemblage from the five excavation units analyzed in detail; bird bones account for about five percent, and fish bones for about 81 percent. (Zoological classes have been quantified by piece count, which exaggerates the amount of fish remains relative to birds and mammals, because fish skeletons produce more elements per individual and fragment more easily than do bones of other classes.)

Vertebrate remains are not distributed evenly among excavation units (Figure 8). Units further upslope and further from the house tend to have fewer vertebrate remains than those down slope and closer to the house; this reflects, in part, the greater depths and volumes of the latter units. Unit Q11 has higher proportions of mammal and bird bones than the other units. Unit S11 contains almost no mammal and bird bones, if the 140 pieces from a single, probably intrusive, small carnivore (discussed below) are discounted.

Figure 9 shows the distribution of zoological classes among the five stratigraphic components. Stratigraphic Components 1 and 5, which are culturally sterile except for mixing from layers above or below, contain only two percent of the vertebrate assemblage. Stratigraphic Component 2 contains 71 percent of the assemblage, indicating that most vertebrate remains were discarded on the preoccupation ground surface adjacent to the house. Stratigraphic Component 3 contains

nine percent of the vertebrate assemblage, and Stratigraphic Component 4, 18 percent.

The proportional representation of the three vertebrate zoological classes is similar for each of the stratigraphic components representing the Loyalist occupation (2, 3 and 4), especially if the small carnivore bones referred to above, which occur in Stratigraphic Component 3, are discounted. The only temporal trend discernible is a slight decrease in the relative proportion of fish remains from the earlier part of the occupation to the later part.

Analysis of the faunal remains from the remaining excavation units will increase the proportions of vertebrate remains in stratigraphic components 3 and 4, relative to Stratigraphic Component 2, since most of the material in the remaining units pertains to the upper stratigraphic components. This also may increase the proportions of mammal and bird bones relative to fish bones, since the former are more common in stratigraphic components 3 and 4 than in Stratigraphic Component 2. However, the range of identified species probably will not increase significantly.

*Large Mammals.* All large mammal remains identified are those of domestic animals, including cattle [*Bos taurus*], sheep [*Ovis aries*], goats [*Capra hircus*], and swine [*Sus scrofa*]. Juvenile and/or immature individuals of each of these species are present, suggesting that the Bliss family kept small herds of each. Pasture must have

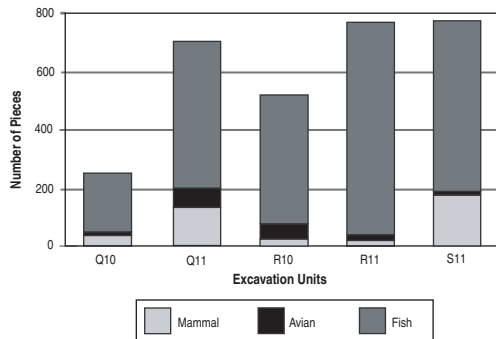
**Table 2.** Vertebrate species identified in the Loyalist site faunal assemblage (brackets indicate tentative identifications; NISP = number of identified specimens; MNI = minimum number of individuals).

Class	Order	Family	Genus/species	Common Name	NISP	MNI
Mammalia	Rodentia	Castoridae	<i>Castor canadensis</i>	beaver	1	1
		Muridae	<i>Microtus pennsylvanicus</i>	meadowvole	9	5
	Lagomorpha	Leporidae	<i>Lepus americanus</i>	snowshoe hare	2	1
	Carnivora	Mustelidae	<i>Martes americana</i>	marten	14	1
			<i>Mustela</i> sp.	mink	2	1
			( <i>Lutra canadensis</i> )	(river otter)	(1)	(1)
		(Felidae)	( <i>Felis domesticus</i> )	(domestic cat)	(140)	(1)
	Artiodactyla	Bovidae	<i>Bos taurus</i>	domestic cattle	53	3
		Suidae	<i>Sus scrofa</i>	domestic swine	11	2
		Caprinae	<i>Capra hircus</i>	domestic goat	5	2
			<i>Ovis aries</i>	domestic sheep	4	2
Aves	Anseriformes	Anatidae	<i>Anser</i> sp. or <i>Branta</i> sp.	domestic or wild geese	4	2
		Anatinae	<i>Anas acuta</i>	common pintail	3	2
			<i>Bucephala albeola</i>	bufflehead	1	1
			<i>Bucephala clangula</i>	common goldeneye	9	3
			<i>Mergus serrator</i>	red-breasted merganser	3	1
			<i>Somateria mollissima</i>	common eider	22	3
	Galliformes	Phasianidae	<i>Gallus gallus</i>	domestic chicken	12	2
	Charadriiformes	Laridae	<i>Larus argentatus</i>	herring gull	5	1
			<i>Larus marinus</i>	greater black-backed gull	4	1
	Alcidae		<i>Alca torda</i>	razorbill	3	1
			<i>Cephus grylle</i>	black guillemot	1	1
			<i>Uria lomvia</i>	thick-billed murre	1	1
	Passeriformes	Emberizidae		sparrows and warblers		
			( <i>Junco haemalis</i> )	(dark-eyed junco)	(2)	(1)
	Corvidae		<i>Corvus brachyrhynchos</i>	common crow	1	1
Chondrichthyes	Squalidae		<i>Squalus acanthias</i>	spiny dogfish	5	3
Osteichthyes	Gadiformes	Gadidae	<i>Gadus morhua</i>	Atlantic cod	55	6
			<i>Melanogrammus aeglefinus</i>	haddock	24	6
			( <i>Pollachius virens</i> )	(harbour pollock)	(2)	(1)

been encouraged in cleared areas, and wild or tame hay harvested, to keep domestic animals over winter. Swine and goats could have foraged in the forest, marshes, cleared areas and intertidal zones, at least during the warm seasons.

There is no evidence that the Bliss family kept horses on the islands. An iron shoe designed to be fitted to a cattle beast was recovered, indicating that they used oxen as traction animals.

*Small Fur-bearing Mammals.* The bones of small wild mammals – hare (*Lepus americanus*), marten (*Martes americana*), beaver (*Castor canadensis*), mink (*Mustela* sp.), and possibly otter (*Lutra* sp.) – are present in the assemblage and suggest trapping was among the economic activities in which the Bliss family engaged. These animals could have been captured on the Bliss Islands, on adjacent islands, or on the mainland.

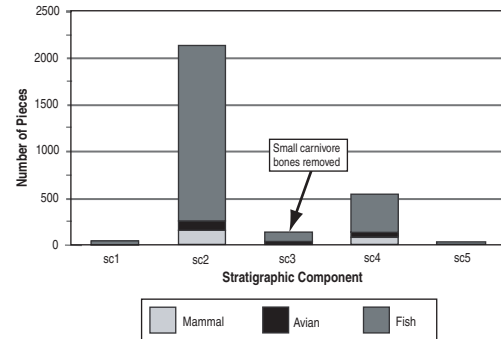


**Figure 8.** The distribution of vertebrate zoological classes among the five excavation units analyzed in detail.

*Microtine Rodents.* Skeletal elements (especially crania and teeth) of numerous meadow voles (field mice [*Microtus pennsylvanicus*]) are present in the assemblage. Voles are attracted to areas cleared and disturbed by humans, and to human storage facilities and refuse heaps. There is no indication that the Loyalists introduced house mice (*Mus musculus*) to the islands.

*Birds.* Bones of five species of wild ducks (common eider [*Somateria mollissima*], red-breasted merganser [*Mergus serrator*], common goldeneye [*Bucephala clangula*], bufflehead [*Bucephala albeola*], and common pintail [*Anas acuta*]) occur in the assemblage. These bones probably represent food remains since some exhibit butchering or consumption marks. Some shorebirds present – razorbill (*Alca torda*), thick-billed murre (*Uria lomvia*), and black guillemot (*Cepphus grylle*) – also could represent food remains, although there is no direct evidence for this. In contrast, other birds identified, especially the gulls (*Larus* sp.) and the crow (*Corvus brachyrhynchos*), may have been predator/scavengers attracted by the presence of young domestic birds (see below), or by human refuse. All of these wild birds are common in the vicinity of the Bliss Islands at various times of the year (Squires 1976:33-52).

At least one adult chicken (*Gallus gallus*) has been identified in the assemblage, suggesting that the Bliss family kept domestic fowl. In addition, the bones of immature birds are present; these probably represent embryonic or recently hatched chicks. Domestic fowl could have foraged for wild foods, but must have been protect-



**Figure 9.** The distribution of vertebrate zoological classes among the five designated stratigraphic components.

ed, to some extent, from avian predators.

It is possible that the Bliss family also kept domestic geese (*Anser anser*). However, wild geese visit the region seasonally (Squires 1976:33-35). Considering the range of wild ducks identified in the assemblage, the two goose bones identified probably represent a wild species, either Canada goose (*Branta canadensis*) or Brant goose (*Branta bernicla*).

*Fish.* Fish bones are numerous, but the range of species represented is small. Most fish bones are those of large individuals of two species of codfish (Gadidae): Atlantic cod (*Gadus morhua*) and haddock (*Melanogrammus aeglefinus*). A third codfish species, harbour pollock (*Pollachius virens*), may be present. A few bones from small fish individuals (possibly juvenile harbour pollock) are present; these may represent the stomach contents of the larger fish. The assemblage also includes the remains of spiny dogfish (*Squalus acanthias*), a small shark species common in the region in summer (Scott 1983:158).

### Noteworthy Faunal Remains

#### *Hyperosteotic Haddock*

During the excavation, we were perplexed by several unusually robust fish bones that we suspected were codfish cleithra exhibiting some sort of pathology. Subsequently, we learned that these bones result from a condition known as hyperostosis, in which benign bone tumours develop in certain skeletal elements of certain fish species. This condition affects only haddock among the codfish, resulting in massively enlarged cleithra

and post-temporals (Figure 10a, b). It occurs so frequently as to be considered normal for mature individuals of both sexes in some haddock populations; the larger and older the individuals, the greater the degree of hyperosteois exhibited (Reading 1995; Wheeler and Jones 1989:112-113).

Hyperosteotic bones serve to distinguish haddock remains from those of Atlantic cod in the Loyalist faunal assemblage. Although haddock remains have been identified in Native sites on the Bliss Islands, hyperosteotic elements have not been recovered from those sites. Their presence in the historic assemblage may reflect the Loyalists' use of metal fishing gear (large iron fish hooks were found in association with the fish bones). This gear may have allowed the Bliss family to take larger, more mature codfish than Native people were able to acquire before European contact.

#### *Shark Spines*

Another set of unfamiliar faunal remains that were subject to some debate and conjecture during the excavations proved to be the dorsal fin spines of spiny dogfish (Figure 10c). Since sharks possess cartilaginous skeletons, the fin spines are the only elements of dogfish skeletons likely to be preserved in archaeological sites in the Quoddy Region. Shark remains have not been identified in Native sites on the Bliss Islands. Again, their presence in the historic assemblage may reflect the Loyalists' use of metal fishing gear.

Since sharks are edible, and the fin spines were found with other food remains, we assume that the Bliss family was taking these creatures for food. However, shark skins have served various technical and decorative purposes in the past, so other motivations for fishing them cannot be dismissed.

#### *A Curious Carnivore*

One hundred and forty pieces from the skeleton of a single, small carnivorous mammal were recovered from excavation unit S11, Stratigraphic Component 3. These bones represent most parts of the post-cranial skeleton of the

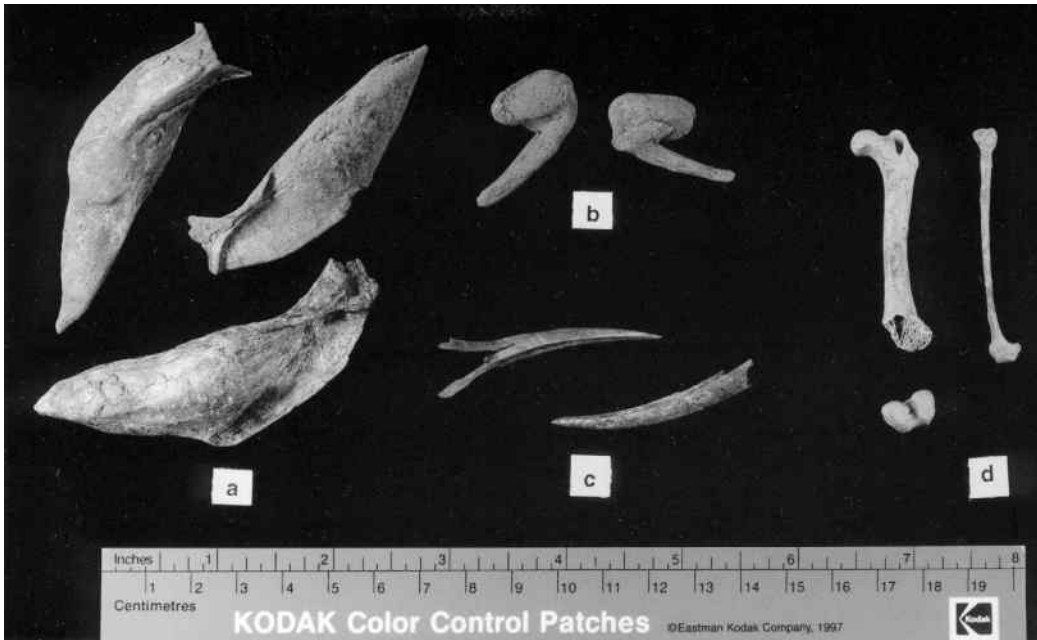
animal. Some small elements such as phalanges may have been destroyed by post-depositional processes or missed during excavation; moreover, neither the cranium nor the teeth were recovered, making species identification problematic.

At first, we assumed these bones were those of a small, wild, fur-bearing mammal, since such species are represented in the assemblage. However, detailed analysis (Beyea 1997) suggests they may be the skeleton of a juvenile domestic cat (*Felis domesticus*). Since the bones are associated with occupation debris, they may indicate that the Bliss family kept cats as pets. However, the stratigraphic position of the skeleton suggests to us that these remains are those of a feral cat that died among the ruins of the house some time after the Loyalist occupation. Later nineteenth-century inhabitants of the islands may have kept cats and fishermen sometimes release cats on the islands to control the vole population. The presence of cats on the site, either during or after the Loyalist occupation, might explain the presence of bones from bird species (such as gulls, crows and songbirds) unlikely to represent human food remains.

#### *A Mysterious Mustelid*

Two mink elements, a right femur and a right fibula (Figure 10d), probably from the same individual, were recovered from Unit Q11. Both bones are larger and more robust than those generally observed in mink (*Mustela vison Schreber*) skeletons: The fibula is 5.18 cm in length, exceeding the average length of two male *M. vison* fibulae (4.43 cm) by 14.6 percent. Although the femur is incomplete, it measures 4.86 cm in length, exceeding the average length of a sample of ten *M. vison* femurs (4.63 cm) by 4.7 percent (Beyea 1997). Since mink exhibit considerable sexual dimorphism (Dilworth 1984:180), these bones exceed average sizes for female mink femurs and fibulae by even larger proportions.

At the time they identified these bones, J. E. Reading and H. G. Savage were working with the primary author on the analysis of sea mink (*Mustela macrodon Prentiss*) bones recovered from the Weir site (BgDq-6), a prehistoric site on the



**Figure 10.** Noteworthy faunal specimens from the Loyalist site: hyperosteotic haddock cleithra (a), hyperosteotic haddock post-temporal (b), shark dorsal fin spines (c), mink femur (d: left) and mink fibula (d: right).

Bliss Islands. The sea mink, which was hunted to extinction during the historic period, was a large mink species adapted to rocky marine shores and islands on the Maine coast (Black et al. 1998:45; Mead et al. 2000). Reading (1995) speculated that the mink bones from the Loyalist site might represent a female sea mink. This is possible, since sea mink did not become extinct until several decades after the Loyalist period (Black et al. 1998:45).

However, the Loyalist mink femur is smaller than sea mink femurs from Maine prehistoric sites (Mead et al. 2000:258). Black et al. (1998:48) concluded that sea mink probably did not inhabit the Quoddy Region (the sea mink bones at the Weir site were probably brought there from Maine by native people). In the absence of mink cranial elements from the Loyalist site, the presence of sea mink in the faunal assemblage cannot be confirmed. The femur and fibula may represent an unusually large male mink (*M. vison*).

## Conclusions

The area we excavated at the Loyalist site is not a midden in the usual sense of that term (that is, an intentionally produced, and consistently used refuse heap), although the marine shell deposit may have served that function at some point during the occupation. Rather, the faunal assemblage suggests a natural surface, modified to some extent by human activity and house construction, where the Bliss family conducted a variety of activities. These activities included butchering and processing domestic and wild animal carcasses, shucking shellfish and disposing of scraps from meals eaten in the house; they may have included skinning animals and preparing hides and furs, and maintaining and baiting fishing equipment. Overall, our interpretation of the area is that it functioned as a dooryard, probably at the side or at the rear of the house.

The faunal remains confirm the historic references to Loyalist period farming activities on the Bliss Islands, and provide the basis for a much-expanded account of the Bliss family's activities during the two decades prior to Samuel Bliss's

death. The family appears to have adopted a mixed farming/fishing strategy, which emphasized stock raising, and in which diet and economic activities were diversified by exploiting wild resources such as fur-bearing mammals, game birds and fish. We assume that most of the remains reflect subsistence activities, but some may result from commercial activities as well.

The Bliss family's farming activities appear to have centred on raising a variety of domestic mammals and birds; in addition to the cattle and sheep referred to in the historic records, they kept goats, swine and chickens. The latter species may have been selected specifically to take advantage of the natural environment of the islands. This strategy makes sense, since the Quoddy Region's climate and soils are not conducive to growing cereal grains for either animal or human consumption. The Bliss family's fishing activities focused on taking large codfish and small sharks and on collecting shellfish. Again, these strategies are understandable – even predictable – given the location Samuel Bliss chose for his homestead.

However, we find the absence of any evidence for the Bliss family hunting marine mammals and terrestrial game, for either subsistence or commercial purposes, somewhat surprising. Seals must have been common around the islands during the Loyalist period, as they were in prehistoric times and as they are now. Deer were less common in New Brunswick before historic clearing (Dilworth 1984:200), but probably always have flourished on the coast, with its mosaic of forests, marshes, meadows and heaths. In addition, moose, bear and probably caribou (extirpated about 1930; Dilworth 1984:205) would have been available on the mainland, and porpoises and whales in the adjacent waters. The Loyalists, with their large boats and guns (we recovered 12 gunflints from the Loyalist site), were better equipped to hunt such animals than Native people were in prehistoric times. However, while cervid and seal bones are common in Native sites on the Bliss Islands, the Bliss family appear to have eschewed such game, perhaps for reasons of cultural tradition and taste.

Unfortunately, we have little basis for determining how typical the Bliss family was in terms

of the settlement and subsistence strategies they adopted, or of placing their activities in the regional archaeological and historical contexts of the Loyalist period. As Murphy and Black (1996:8) point out, historic period zooarchaeology has received little attention in the Maritimes, with the exception of some analyses of faunal remains from Acadian sites. Acadians inhabited the Quoddy Region (Bourque 1990; Ganong 1983:50-56), but no Acadian sites have been recorded. Loyalist occupations, comparable in age and location to the Loyalist site on the Bliss Islands, are known from adjacent areas (for example, Grand Manan [Allaby 1984:14; Black 1984:19]), but these have not been excavated. We know of no other analyses of faunal remains from Loyalist sites in the Maritimes. Here, we hope to have demonstrated that zooarchaeological examinations of Loyalist sites are a viable means of augmenting the written records from this important period in Maritime Provinces history, and to have stimulated further research in this direction.

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