FISHERMEN'S FOODWAYS ON THE PETIT NORD: FAUNAL ANALYSIS OF A SEASONAL FISHING STATION AT THE DOS DE CHEVAL SITE (EfAx-09), NEWFOUNDLAND

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by

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ABSTRACT

Archaeological excavations at the migratory French cod fishing station site of Dos de Cheval (EfAx-09), provided a substantial collection of faunal remains which can be used to study fishermen foodways. Migratory fishing voyages presented some material constraints on the type of food that could be transported and conserved. While archival documents such as provisioning contracts and travel accounts suggest the kind of food products that were brought on board, they only vaguely discuss the incorporation of wild meat in the fishermen's diet while they were on shore. Using zooarchaeological, archaeological and historical data, the present thesis explores specific aspects of food provisioning, but also identity and social status differentiation in food consumption among the Petit Nord fishermen. It is argued that hunting was mainly a privilege of the officers, although ordinary fishermen exploited a variety of seabirds and shorebirds. The subsistence at Dos de Cheval was based almost entirely on domestic mammals, wild land mammals being used only occasionally.

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I would like to dedicate this thesis to my father, Jacques, who unfortunately did not live to see it come to completion. Merci papa d'avoir cru en moi.

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A-N: Anglo-Newfoundlander context, see Chapter 2 for more information.

CEW: Coarse Earthenware

CMC: Canadian Museum of Civilization, Gatineau, Québec.

CSW: Coarse Stoneware

EF: Earlier French context, see Chapter 2 for more information.

LF: Later French context, see Chapter 2 for more information.

MAU: Minimum Animal Units

MNE: Minimum Number of Elements

MNI: Minimum Number of Individuals

MUN: Memorial University of Newfoundland

MWS: Mandible Wear Stages

NISP: Number of Identified Specimens

REW: Refined Earthenware

TGEW: Tin-Glazed Earthenware

TWS: Tooth Wear Stages

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CHAPTER 1: INTRODUCTION

In the summer of 2003, Dr. Peter Pope and Patty Wells from the Archaeology Unit of Memorial University were surveying archaeological sites along the east coast of Newfoundland's Great Northern Peninsula (Figure 1). When they arrived in the small community of Conche, the French Shore Historical Society strongly suggested a visit to a locally known French fishing site at Long Point, in Cape Rouge harbour (Figure 2). The site, which is about 1 km southeast of the small community of Crouse, was named Dos de Cheval (EfAx-09), after a map of 1858 by G. Cloué (Figure 3). The site corresponds to the French fishing room of Champ Paya. When Dr. Pope and his team tested the site in 2004, they quickly established its great archaeological potential (Pope 2005).

Funded by a SSHRC research grant, Dr. Pope and his team excavated the site in 2006, 2007 and 2008. Those three consecutive seasons of extensive archaeological investigations at Dos de Cheval produced knowledge about the site formation and transformation, the architecture of a Breton bread oven, and the presence of a large cross (Pope 2006; Pope *et al.* 2007; Pope *et al.* 2009). In addition to the structures excavated, the team recovered more than 14,000 artefacts and over 10,000 animal bones, as well as the skeleton of a man, most likely a French fisherman. Apart from a few underwater excavations carried out in the region of Conche (Barber *et al.* 1981; Barber and Barber 1982), Pope's work is the first archaeological exploration of historic sites in the region of the Petit Nord, on the east coast of Newfoundland's

Figure 1. Fishing stations of the Petit Nord, c. 1640-1832. Cap Rouge harbour is underlined and indicated by a black arrow. (Source: Ed Eastaugh for An Archaeology of the Petit Nord)

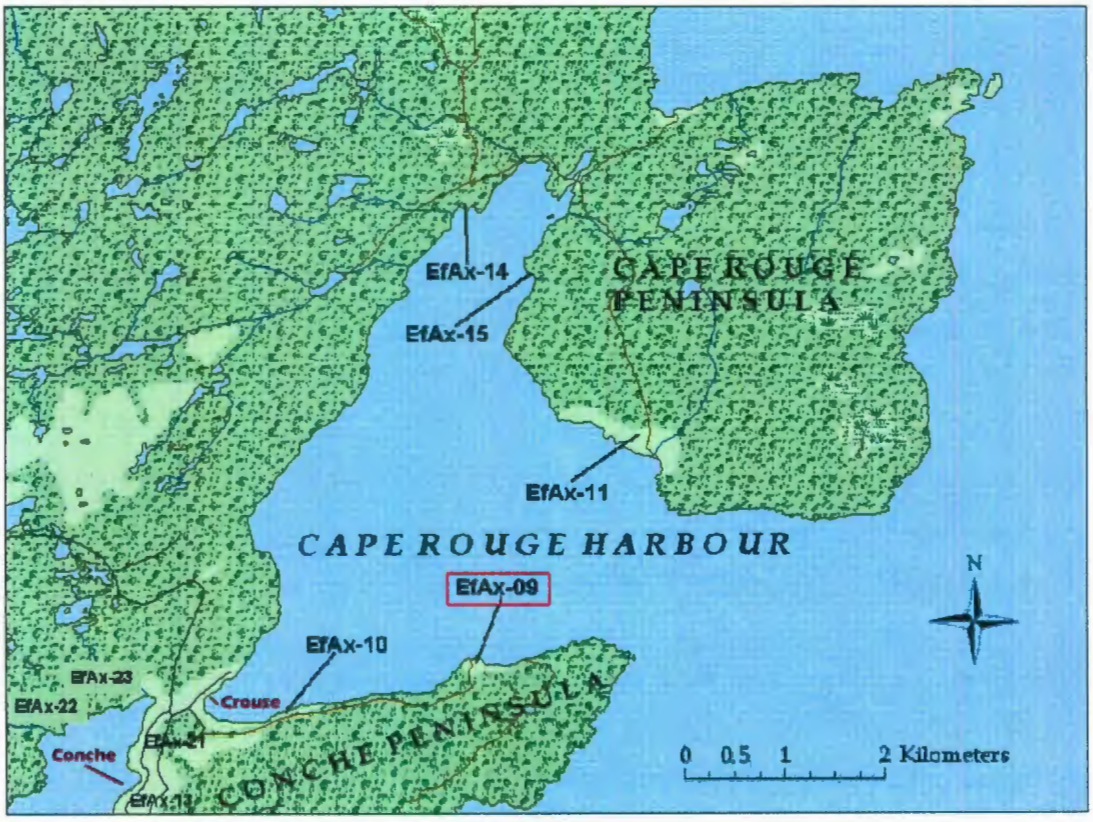

Figure 2. Archaeological sites in Cape Rouge Harbour, Newfoundland. The site of Dos de Cheval (EfAx-09) is framed. (Source: Marco Chiaramonte for An Archaeology of the Petit Nord)

Figure 3. *Detail from* "Plan du Hâvre de Cap Rouge (côte nord-est de Terre-Neuve)" *[Map of Cape-Rouge Harbour] by G.-C. Cloué, sketched in 1858 and deposited at the French Navy Maps and Plans Library in 1864. The section shown depicts Champs Paya, now the site of Dos de Cheval (EfAx-09). (Center for Newfoundland Studies, Map 193)*

Great Northern Peninsula. Through *An Archaeology of the Petit Nord*, Dr. Pope and his graduate students from Memorial University have started to fill gaps in the little-known history and lives of the shore-based French cod fishermen who came every summer to Newfoundland's Atlantic coast from the 16th century onward. One aspect of their lives, which is the focus of this thesis, is the specific foodways that they developed while they were on shore.

Zooarchaeological studies of historic cod fishing sites on North America's Atlantic coast are rare. The present thesis is the first complete study of an archaeofaunal assemblage from a French seasonal cod fishing site. Recently, Hodgetts (2006) and Tourigny (2009) both published compelling arguments using 17th century faunal assemblages, exploring the diet and socio-economic differences among the inhabitants of the English Colony of Avalon, in present-day Ferryland, Newfoundland. This permanent cod fishing settlement was established in 1621 by Sir George Calvert (named Lord Baltimore in 1624). It was destroyed during a French attack in 1696 (Hodgetts 2006: 125-126). At Red Bay, Labrador, Cumbaa (2007) analyzed the faunal collection from a 16th century Basque whaling station. Cumbaa (1983) also analyzed the archaeofaunal collection from a fishing village on Grassy Island, near Canso, in eastern Nova Scotia. Balkwill (1987, 1990) analyzed a collection from the Pabos site, a permanent 17th and 18th century fishing settlement on the southeast shore of the Gaspé Peninsula. A faunal assemblage from a 17th and 18th century French permanent cod fishing station in Mont-Louis, on the north shore

of the Gaspé Peninsula, is currently being analyzed (Tommy-Simon Pelletier, pers. comm.).

In the present thesis, I focus on the substantial faunal assemblages recovered during the 2006, 2007 and 2008 excavation seasons at Dos de Cheval. Three different periods of occupation are examined: Earlier French (17th and 18th centuries), Anglo-Newfoundlanders (c. 1790-1815), and Later French (19th century). These groups cover a wide chronological range and permit an interpretation of both the evolution of food consumption and the contrast between migratory French and Anglo-Newfoundlander fishermen on the site.

1.1 General Objectives

The main objective of this thesis is to document and better understand the specific foodways of French migratory cod fishermen. First, fishermen's foodways will be used as a medium to explore the expression of a distinct socio-professional group identity in the broader context of European society. As argued by Turgeon and Dickner, fishermen foodways in the popular culture of the time are depicted as an obstacle to overcome, which reinforces the image of the sailor as courageous and virile, almost heroic (1990: 67). According to these researchers, distinction is not acquired by the search for good, elegant and delicate food, but instead by the achievement of a monotonous, coarse and repulsive diet.

Second, food products will be used to assess social status differentiation inside the microcosm of the fishing station. Fishing expeditions were hierarchical. Crew composition varied, depending on total numbers, but it most often included the captain, pilot, surgeon(s), chaplain(s), masters, sailors, novices and apprentices. In the context of the transatlantic fisheries, where food intake was strictly controlled and normalized, the consumption of food products beyond the basic sustenance needs can be considered a luxury. The consumption of luxury food by certain elites in the fishing crew (i.e. captain, masters, surgeons and chaplains) may have been used to mark their social status and to assert their distinction from the rest of the crew members (i.e. *matelots*, *novices*, *mousses*) (van der Veen 2003).

1.2 Research Questions

The general objectives outlined above guided the choice of specific research directions. Two main, interrelated research questions are approached: the exploitation of local fauna, and husbandry and butchery practices.

1.2.1 Exploitation of Local Fauna

Using zooarchaeological data and historical sources, the first research question is how French migratory fishermen exploited the natural environment around the fishing stations. Compared to the fishermen on the Grand Banks, the shore-based cod fishermen had access to a wider range of natural food resources: land and sea mammals, wild fowl, fish, fresh vegetables, berries and plants (de la

Morandière 1962: 78; Brière 1980: 56). While provisioning contracts indicate the kind of food products that were put in the ship's cargo, they give no indication of the extent to which the fishermen exploited their surroundings in search of alternative food sources.

The fishing activities were based onshore but required little penetration into the interior. Until Newfoundland built a railway in the late 19th century, little was known about the island's interior. The concentration of activities along the shore made fishes, sea mammals and seabirds the most accessible complement to the fishermen's diet. The exploitation of certain wild animals compared with others may have been driven by multiple factors: proximity of resources, time investment needed, hunting knowledge and tools, socio-economic status and leisure time or cultural traditions.

The timeframe in which cod were present along the coast (roughly June and July) put a lot of pressure on the fishermen. They were fishing every day of the week, from early in the morning to late in the afternoon. When would they have time to trap and hunt wild game? According to historical accounts, the captain could eat wild game that he hunted with the surgeon, like pigeons, ducks, geese, teals, rabbits and sea birds (Denys 1672: 175-176). How did that privileged access to alternative food resources served to mark and enhance the social status of officers in the fishing room? Showing that they had the leisure of trapping and hunting wild game in a time-constricted context could have helped display their superior social status. If they shared that wild meat with the other crew members in an environment where food

was tightly controlled and monotonous, they could become highly appreciated and well-regarded persons.

1.2.2 Husbandry and Butchery Practices

Previous faunal research at the site has revealed that pigs were, after cod, the most abundant animals in the faunal assemblage (Swinarton 2007). What were the provisioning strategies for pork? Three potential situations will be investigated for this question: 1) pork was kept, barrelled and cured, in the ship cargo; 2) live animals were brought to Newfoundland on the ships, and were kept on the site until slaughtered; and 3) pork and/or living animals were procured from Anglo-Irish settlements on the Newfoundland coast. We suspect by the presence of anterior portions of tusks and anterior portions of mandibles that whole, possibly live, pigs were sometimes present on the site (Betts 2000: 28). Did the fishermen slaughter pigs in a consistent fashion and to maximize meat production kill them at their meat yield peak age (around 24 months old)? Can we distinguish changes in the slaughtering patterns over time, and between the French and Anglo-Newfoundlander occupations? Are there any disparities between different areas or deposits on the site?

The analysis of butchery patterns and body part representation, mainly of pigs and sheep/goat, will permit the identification of culturally-specific practices. The butchering units of historic French and English butchers are different. Looking at the different archaeological deposits, we will attempt to perceive whether cuts of meat were used for communal or individual meals. These analyses will also provide the

information necessary to interpret the consumption of certain meat cuts by individuals of higher or lower social status.

1.3 Historical Background

The migratory, shore-based dry salt-cod fishery practiced on the French Shore contrasted with the green or wet fishery, carried out on the Grand Banks. The shore-based fishery needed more manpower than its Grand Banks counterpart. The drying and salting activities required a large crew; fishing rooms normally supported from 80 to 230 crew members. Cod fishermen also needed a suitable stretch of land to build a stage (*chaufaud*), cabins, flakes and other features, and to clear cobble beaches (*galets*) (Pope 2008a: 9; See Figure 4). Access to fresh water and proximity to the fishing grounds were essential. Pope has argued that the fishermen often chose to establish their fishing rooms close to seabird colonies, these latter often situated close to the ecological niche that also supported large populations of fishes (Pope in press).

In France, the Christian calendar had 166 fast day during which people could not eat meat. Fish in general, and cod more particularly, became a very important part of the Roman Catholic diet (Turgeon 1987: 163). The north of France mainly imported the wet or green cod, while the dry salt-cod were sold mostly on the Mediterranean markets, as they better tolerate warm climates (Turgeon 1987, de la Morandière 1962). The Newfoundland fishery not only became an important

Figure 4. Fishing station used by French fishermen in the Petit Nord. (Source: Planche 114 in Duhamel du Monceau 1769, reprinted in 1793)

commercial venture, but also trained skilled seamen for the French navy (de la Morandière 1962).

From the 16th century onward, fishermen of various nationalities shared space on the coasts of Newfoundland: the Basques occupied the west, the English and Portuguese occupied the Avalon Peninsula, and the Normans and Bretons fished on the east coast of the Great Northern Peninsula, traditionally called the *Petit Nord* (Pope 2008a: 2-6). Breton cod fishermen ventured to Atlantic Canada in the first quarter of the 16th century, possibly as early as 1504 (Pope 2008a: 3). Breton crews are documented in Cape Rouge harbour as early as 1541, when Jacques Cartier pressed them for provisions (Pope 2007). The Breton crews dominated this productive harbour from the 17th to the 18th century.

By the Treaty of Utrecht, in 1713, Britain acquired sovereignty over Newfoundland. However, French fishermen kept the privilege of establishing seasonal fishing stations to fish and dry cod on what was called the French Shore, from Bonavista Bay to Pointe Riche (Candow 1988: 3). In the 18th century, the limits of the French Shore were modified by treaties signed between the French and British administrations. These geo-political issues will not be covered here, as they have been extensively discussed elsewhere (cf. Brière 1983, 1990; de la Morandière 1962; Hiller 1991, 1996). During the Seven Years war (1756-1763), the French ceased their fishing activities in Newfoundland due to the British naval superiority and the demand for manpower in France. By the Treaty of Paris (1763), France lost Cape Breton and Labrador. It however retained the right to fish on the French Shore (Petit Nord) in

Newfoundland, and received the small archipelago of St. Pierre and Miquelon as a shelter for its Newfoundland fleet, but was prohibited from establishing any permanent settlements (Candow 1988: 4; Pope 2008b). When French fishermen returned to Newfoundland after 1763, parts of the French Shore had been settled by Anglo-Irish families. This was the result of the expansion of the resident fishery during the war. In 1783, the limits of the French Shore were shifted to the west. It now encompassed the shores from Cape St. John to Cape Ray (Hiller 1996, Pope 2008b).

In 1793, the Napoleonic Wars excluded the French from the Newfoundland cod fisheries. During this interlude, Newfoundland fishermen once again pushed their efforts further north into the French Shore. By 1807, 131 Newfoundland ships fished along the French shore, and some went farther north, crossing the Strait of Belle Isle to fish in Labrador (Candow 1988: 5). When the French came back to the Petit Nord after 1815, the Anglo-Newfoundlander northern fishery shifted its major focus to Labrador. The French took up their fishery after the wars, as before: 160 ships were fishing on the Petit Nord in 1820 (Candow 1988: 6). In the 19th century, the Breton migratory fishermen coexisted, not without problems, with a growing population of Anglo-Irish livyers (Pope 2008a: 4). At the beginning of the 19th century, the fishery became more industrialized, with the improvement of fishing techniques and the increase of population and demand in Europe. In the second half of the 19th century, the catches were fluctuating, the demand for cod on the markets slowly dropped because of the softening of religious authorities, and the shift from

sail to steam meant that Newfoundland was no longer a nursery of seamen for the French navy. Also, the Petit Nord shore-based fishery had been in decline since the late-18th century with the growth of a bank fishery based on St. Pierre and Miquelon (Candow 1988: 8). In 1904 France ceded its seasonal fishing rights to Great Britain, under the terms of the Entente Cordiale, in exchange for British territorial concessions in Africa and 1 375 000 francs (Hiller 1996, Candow 1988: 7, Miller Pitt 1981a: 380).

With this general historical background in mind, it is now possible to look at the history at the scale of the site of Dos de Cheval and its region. The earliest dateable artefacts recovered from the site can be placed around the 1650s. However, earlier use of the site is very likely (Pope 2008b: 11). Soils did not form over much of the most densely occupied part of the site until the second half of the 17th century. Earlier materials therefore tend to be in secondary deposits and, indeed, are often waterworn (Pope, personal communication, 2009).

Many French crews along the Petit Nord hired Irish *guardiens* to protect their fishing rooms during winter. For example, by 1800, at least one family had settled in Conche (Miller Pitt 1981b: 495)[1]. However, the fishing rooms in Cape Rouge harbour only hired *guardiens* in the second half of the 19th century. In 1872, the first census of Cape Rouge harbour was taken, reporting English settlers. The families of Maurice Poor and James Byrne were based in southeast Crouse and the families of

[1] See also Jones 2009 for archaeological excavation of a *guardien* family household at Kearny's Cove, in Croque.

Timothy Pine, Thomas Pine, a Mrs. Sweetland and a Mrs. Ensley in northeast Crouse (Miller Pitt 1981b).

It appears that the site of Dos de Cheval, also known as Champ Paya, did not house an over-wintering Irish caretaker. However, archaeological evidence indicates that Anglo-Newfoundlander fishermen used the site during the Napoleonic Wars (c.1790-1815). The site is sheltered and conveniently located at the mouth of the harbour, closer to the fishing grounds than the rooms southwest of the harbour, and it offered large stretches of cobble beaches suitable for drying fish. After all, what made a good fishing room for the migratory French fishermen was equally good for the migratory Newfoundland fishermen.

1.4 Ecological Background

The site of Dos de Cheval is situated in the Northern Peninsula ecoregion (Damman 1983). Limestone underlies many areas in the northern and western part of the northern peninsula, while acidic rocks, mainly gneiss, occur in the remainder of this region (Damman 1983: 179). Climatically, the Northern Peninsula differs from other regions in the island by the short growing season, which ranges from 110 to 150 days (Damman 1983: 180). The site of Dos de Cheval is situated in what is called the Northern Coastal subregion. The vegetation is composed of exposed, rocky dwarf shrub barrens with areas of mostly non-commercial forest (Damman 1983: 182). In terms of climate this subregion is even less favourable because of the

coldness of the surrounding ocean water. The lakes, forests, rivers, shores and meadows of Newfoundland offer a variety of wild fauna. Although indigenous land mammals in Newfoundland are limited to 16 species (Table 1.1), many birds breed or pass through in migration. Among these are many species of sea birds, ducks, curlews, plovers, jays, etc.

Table 1.1 The indigenous land mammals of the Island of Newfoundland (from Dodds 1983: 511).

Order	Family	Scientific Name	Common Name
Chiroptera	Vespertilionidae	*Myotis lucifugus lucifugus* (Le Conte)	Little Brown Bat
		Myotis keenii septentrionalis (Trouessart)	Eastern Long-eared or Keen's Bat
Lagomorpha	Leporidae	*Lepus arcticus bangsii* Rhoads	Arctic Hare
Rodentia	Castoridae	*Castor canadensis caecator* Bangs	Newfoundland Beaver
	Cricetidae	*Microtus pennsylvanicus terraenovae* (Bangs)	Meadow Vole
		Ondatra zibethicus obscures (Bangs)	Newfoundland Muskrat
Carnivora	Canidae	*Canis lupus beothucus* Allen and Barbour	Newfoundland Wolf
		Alopex lagopus ungava (Merriam) [a]	Arctic Fox
		Vulpes vulpes deletrix Bangs	Newfoundland Red Fox
	Ursidae	*Ursus americanus hamiltoni* Cameron	Newfoundland Black Bear
		Ursus maritimus Phipps [a]	Polar Bear
	Mustelidae	*Mustella erminea richardsonii* Bonaparte	Richarsdon's Ermine
		Martes americana atrata (Bangs)	Newfoundland Marten
		Lontra canadensis degener (Bangs)	North American River Otter
	Felidae	*Lynx lynx subsolanus* Bangs	Newfoundland Lynx
Artiodactyla	Cervidae	*Rangifer tarandus caribou* (Gmelin)	Caribou

[a] Non-breeding species. Seasonal visitors.

1.5 Thesis Structure

The remainder of this thesis is structured as follows. Chapter 2, Archaeological Contexts, presents the archaeological contexts from which the bulk of faunal remains was collected. As discussed above, the focus will be on the establishment of three chronological periods: Earlier French, Anglo-Newfoundlander, and Later French. Chapter 3, Methodology, first provides a review of the different zooarchaeological methods used in this thesis: taxonomic abundance, skeletal part frequencies, butchery marks and age profiles. It then discusses three kinds of historical documents and how they relate to the research questions. Chapter 4, Results, presents the results of the faunal analysis, which are then interpreted using the chronology described in Chapter 2. The results of five analytical methods are presented. Chapter 5, Interpretation, interprets the faunal datasets and the historical documentation to help answer the two main research questions, which relate to the exploitation of the local fauna and the husbandry and butchery practices. Chapter 6, Discussion, discusses the data presented in this thesis and links these with comparative data in order to approach the two general objectives presented in Chapter 1. Chapter 7, Conclusion, discusses the original data this project produced, the limitations of this research, and some future avenues of investigation.

CHAPTER 2: ARCHAEOLOGICAL CONTEXTS

The fishing station site of Dos de Cheval was surveyed in 2004, followed by full-scale excavations in 2006, 2007, 2008 and 2009. The present M.A. project considers the faunal remains from the first three extensive excavations, from 2006 to 2008. During the 2004 survey, faunal remains were not collected.

This chapter first introduces Area A and Area C and their associated features, where most of the faunal remains were recovered. Then, the chronology discussed in Chapter One is presented. These consist of Earlier French, Anglo-Newfoundlander and Later French. For each phase, the aggregation of certain events from the same excavation year, or from two or three different field seasons will be presented and the justifications for these aggregations will be explained. Possible interpretations as to the nature of each aggregate of events are then presented, as well as some diagnostic artefacts and stratigraphic information to help date the deposit. Finally, some general comments on the archaeological deposits and some possible biases related to the nature of the deposits are discussed.

2.1 Areas of EfAx-09

Seven areas have been defined at Dos de Cheval (EfAx-09), ranging from Area A to Area G. All of these have been tested since 2004, but the full-scale excavations have focused mostly on Area A and Area C. These two areas, and

especially Area C, are where most of the faunal remains have been recovered. Deposits can sometimes be associated with certain features, like the bread oven in Area A or the burnt structure in Area C. This section briefly describes these areas and their associated features. Particular attention is directed towards features related to contexts rich in faunal remains.

2.1.1 Area A and Associated Features

Area A is a cobble beach west of the steep slope formed by the ancient beach terraces (Figure 5). It includes features such as a long galet used for drying cod oriented roughly northeast/southwest and a bread oven against a bedrock outcrop on the west end of the site (Feature 22) (Pope *et al.* 2007: 16).

The bread oven was partly excavated in 2007, as part of Geneviève Godbout's M.A. project (Godbout 2008). Three phases were established at the bread oven mound: Phase 1 which might be linked to pre-bread oven food preparation activities; Phase 2, the construction and use of the bread oven; and Phase 3 camp fire. Godbout argues that "the French bread ovens of the Petit Nord suggest the socio-economic importance of bread in the fishing crews' lifeways and in the expression of their identity in the landscape." (Godbout 2008: ii). The faunal assemblage found in Phase 2 provides insights into a secondary use of the bread oven, that of cooking fish and meat.

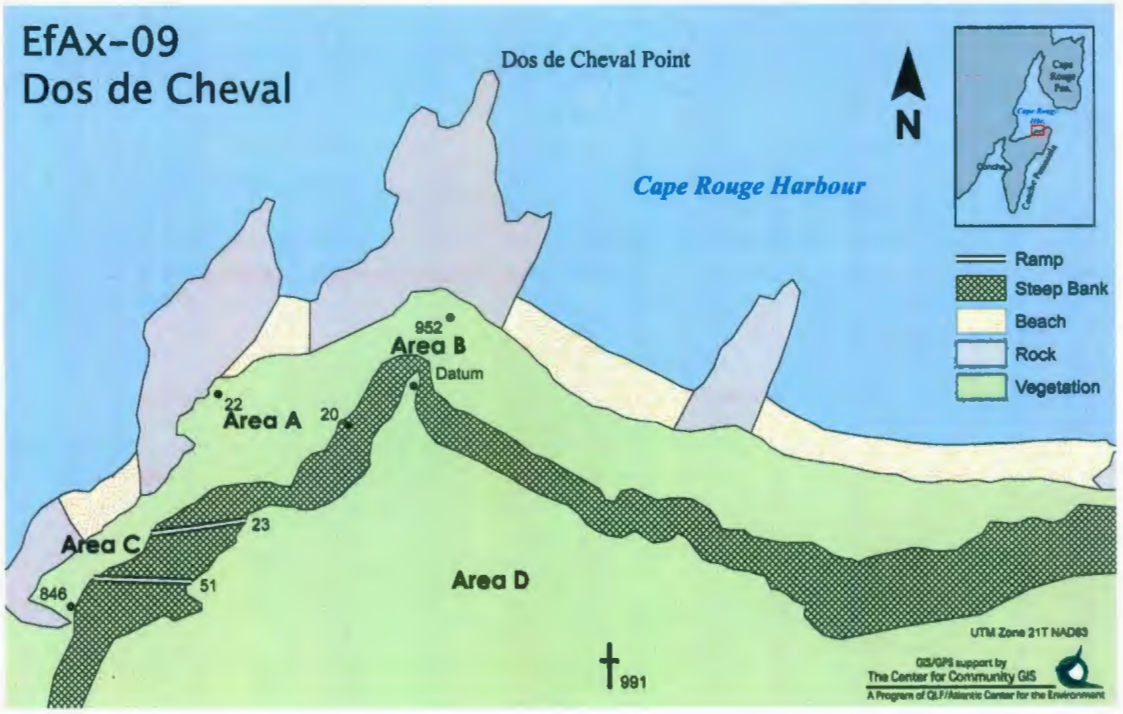

Figure 5. Plan of Dos de Cheval, with main areas shown. (Source: S. Green, The Center for Community GIS, for An Archaeology of the Petit Nord)

The other features in Area A have not been extensively excavated, thus providing a less significant assemblage of faunal remains. Feature 952, in Area B, identified in the 2004 survey of EfAx-09, is a sub-rectangular mound, made out of stones and partially washed away to the north, measuring about 6 x 3 m (Pope 2007: 16). First thought to be the remains of a bread oven, excavation of about a third of the mound disproved that hypothesis. The function of this feature is still unclear. While it provided a significant amount of faunal remains (N=1148), its uncertain function make the interpretation of the related faunal remains difficult and less relevant to the present project than other areas (Noël 2008).

2.1.2 Area C and Associated Features

The waterfront Area C is the narrow galet and beach to the south of Area A. It extends southward to a large prominent outcrop of the bedrock (see Figure 5). During the initial survey in 2004 and excavation in 2006, it turned out to be the most productive area (Pope 2007; Pope *et al.* 2007). According to historical maps, this would have been where the fishermen had their stages and landed their boat (Pope *et al.* 2007).

Area C was the main focus of archaeological activities in 2007 and 2008. In 2007, a trench was excavated running in an east/west alignment, from the vegetation edge along the beach towards the older beach terraces inland (Brown 2009). At around 35 cm below the surface, the remains of a boat ramp (Feature 1021) were uncovered. It is composed of alternating rows of long tabular rocks and wood logs (Figure 6). This feature was covered by a lot of bent nails of different sizes,

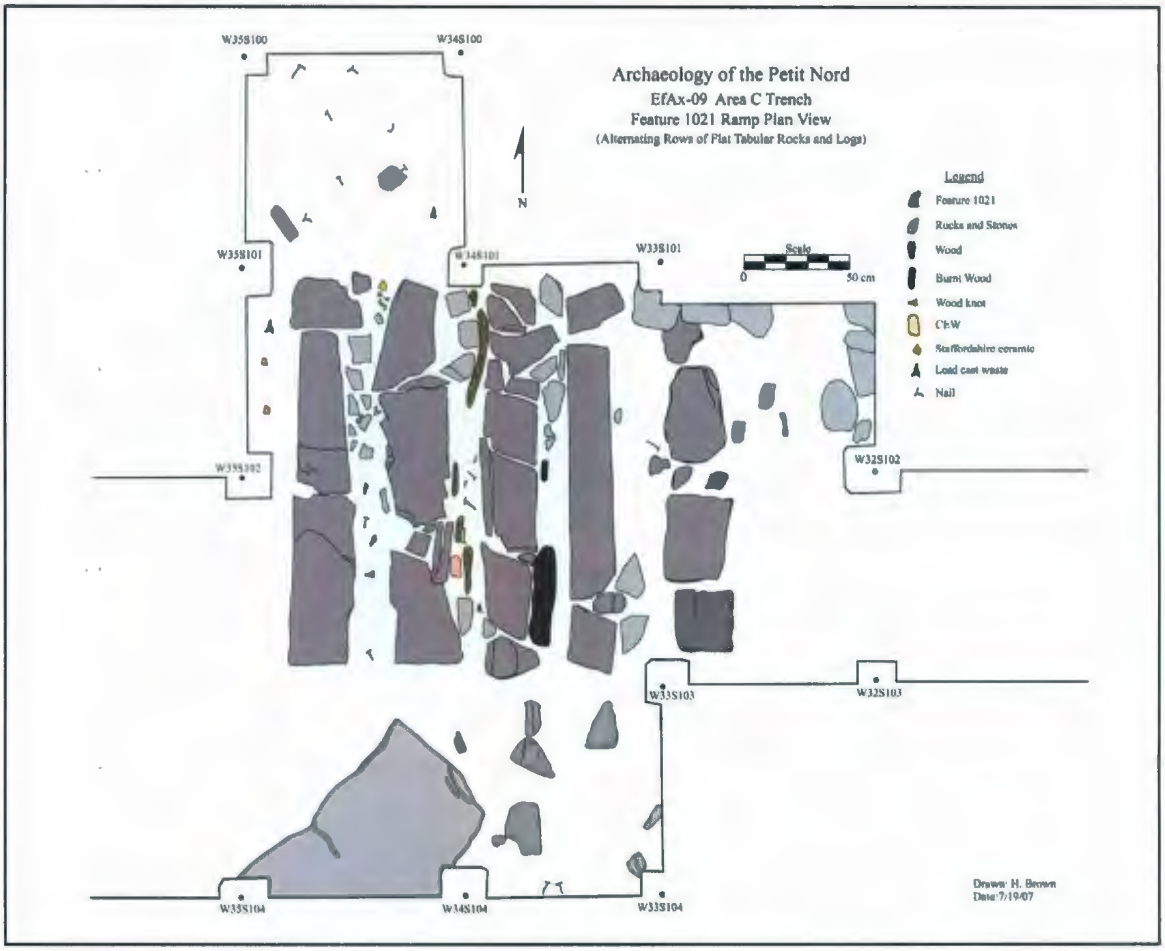

Figure 6. Plan view of Feature 1021, ramp, alternating rows of tabular rocks and logs. Drawing courtesy of H. Brown.

reinforcing the argument that this ramp was used for the repair of fishing boats. The deposits over the ramp were rich in faunal remains. Under that feature, at about 60 cm below the surface, a layer of dark greasy charcoal was discovered, which is interpreted as the remains of a burnt wooden cabin. In some areas of that event, burnt fragments of wooden logs and planks, charred canvas and ropes, and postholes have been recorded. Under this cabin, they collected many faunal remains, as well as ceramics and a gold-gilded button (Figure 7). Downhill and seaward from that structure, a midden-type deposit was found, containing many bones, but also certain high status items such as stemware sherds and glass tumbler bases (Figures 8 and 9). These finds indicate that this structure could have been associated with higher status crew members, possibly a captain or other officers (Harley Brown, personal communication).

In 2008, Amy St John, Mélissa Burns and the author returned to Area C. St John extended and widened the 2007 trench eastward, running towards the higher beach terrace of Area D. Burns and St John also opened a new trench running north/south starting a few metres south of Harley Brown's trench (Figure 10). This Stage Operation, as it was called, yielded many large sherds of ceramics, some of them being the earliest yet found on the site, but did not produce much faunal material. At the northern end of the wider box opened at the east end of the 2007 trench, we exposed the remains of a U-shaped dry masonry hearth made of tabular stones, resting on an impressive slab of stone (Figure 11). This structure lies directly on the natural beach level. In front of the hearth (to the west), we excavated two

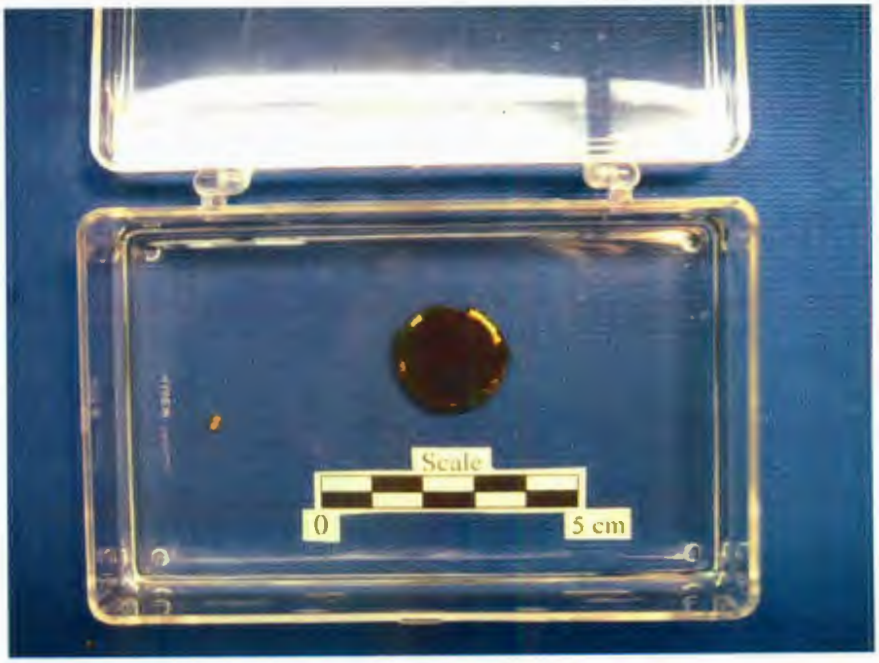

Figure 7. Gold-gilded wooden button, from Area C, W31S103, Event 1061. (Courtesy of H. Brown)

Figure 8. Stemware sherds, from Area C 2007's Trench. (Courtesy of H. Brown)

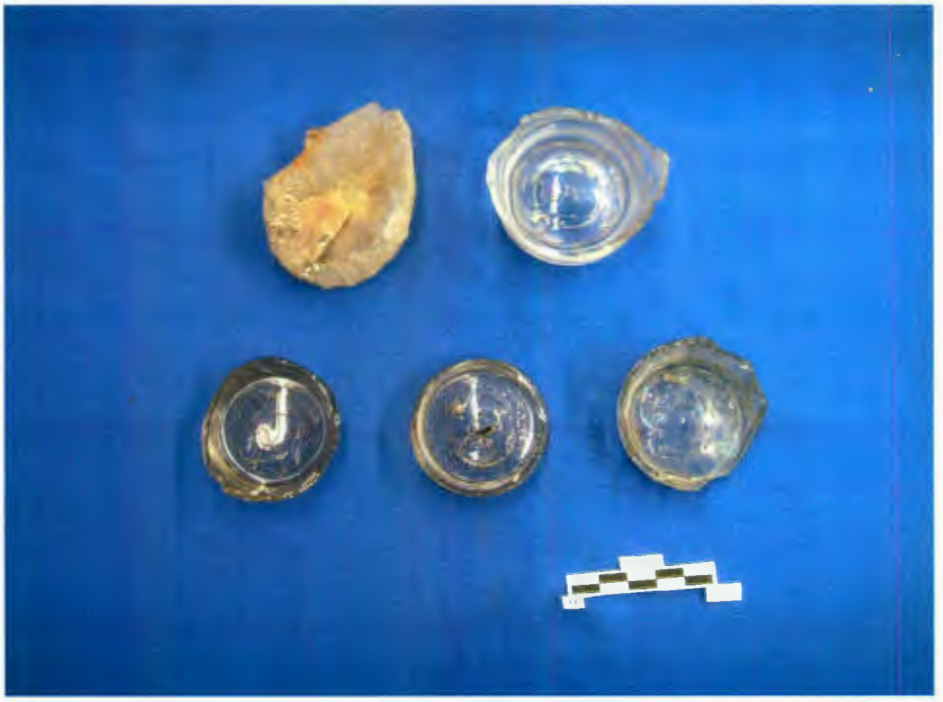

Figure 9. Glass tumbler bases, from Area C 2007's Trench.

(Courtesy of H. Brown)

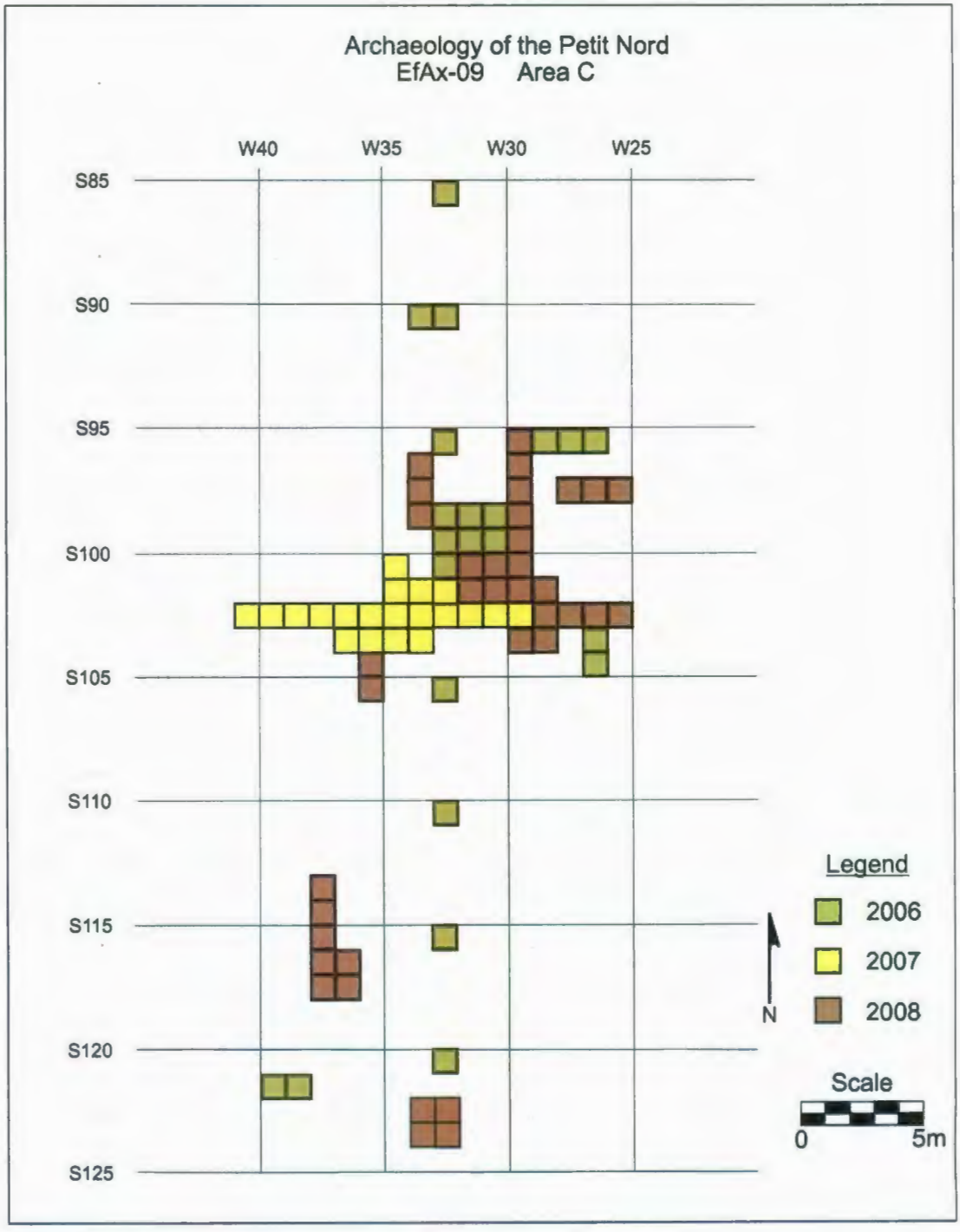

Figure 10. Grid of Area C, EfAx-09, showing the units excavated in 2006, 2007 and 2008. (Courtesy of H. Brown)

Figure 11. Top: Dry masonry hearth structure (Feature 1235) sitting on large tabular rocks (Feature 1237). Bottom: Charred remains of a burnt structure, Feature 1248; W32S102-W30S100, to east. (Source: S. Noël; caption 80719C.009)

overlying layers of greasy charcoal, similar in texture and at the same depth as the one excavated by Brown in 2007. The base of the hearth structure lies at the same level as the burnt structure which is directly west of it. This information indicates that the hearth was part of a larger wooden structure.

2.2 Earlier French Period (17th-18th Centuries)

The waterfront Area C was the most productive area in terms of faunal remains from the 17th and 18th century French occupations. This is not surprising, considering that this area was at the centre of the processing and domestic activities for at least 250 years. The events associated with the Earlier French period are spread throughout Area C and were excavated in different years. In this section, the relevant events are regrouped into interpretable contexts. This is particularly important when it comes to quantifying faunal remains. The MNI (minimum number of individuals) count can be greatly inflated by inadequate aggregation of events prior to quantification. Particular attention is directed towards contexts that can be related to a specific feature or a specific task (i.e. processing activity, domestic refuse, etc.) and those that have produced sufficient faunal remains to distinguish patterns or the lack thereof.

Two contexts are possibly fish processing or domestic middens from the late 17th to early 18th century period. A third context is a mid 18th century midden-type deposit underlying the Feature 1248 burnt structure. The fourth context is another

midden-type deposit situated downhill and to the west of the burnt structure. It might be contemporary with the structure (Feature 1248) and the result of discarding domestic refuse from one or maybe two subsequent cabin features. Finally, the fifth context was found over the Feature 1021 boat ramp, probably associated with a processing or working area.

2.2.1 Late 17th- to Early 18th-Century Contexts (EF1 and EF2)

The first deposit is composed of Events 1081 (higher) and 1203 (lower) which are superposed one over the other (EF1; see Appendix 1). Like the previous context, the nature of this deposit is not clear. It might be related to a working or processing area, and could also have served as a midden area. In this deposit, artefacts such as sherds of French CEW and CSW, Brown Faience TGEW and REW Creamware were recovered (see list of abbreviations, page xx). Like the previous deposit, the presence of REW Creamware might be intrusive and reflect 19th-century activities that have disturbed the deposit. According to its stratigraphic position, this deposit likely dates from the late 17th century to the mid 18th century.

Under the midden-type deposit of Event 1059 and over the preceding events, Brown excavated two deposits dated from the late 17th to early 18th centuries. The first context is composed of Events 1067, 1077 and 1083 (context EF2). The nature of this deposit is unclear. The significant amount of artefacts and faunal remains found in it tend to indicate that it was used as an open area midden. Artefacts such as a 17th century Dutch fleur-de-lys pipe stem, a "HENS" pipe stem (probably an 18th century JOHN STEP/HENS pipe), and French CSW and CEW were found. Further down

towards the sea, in Event 1067 and 1077, similar artefacts were found, along with REW Creamware. This later ware is probably intrusive, as the deposit has been disturbed closer to the present edge of vegetation, next to the active beach. The presence of late 17th-century material tends to put the date of this deposit between the late 17th and the late 18th century.

2.2.2 Mid 18th-Century, Midden Under Burnt Structure (EF3)

The burnt structure was first formally recorded as such in 2007 as Feature 1201, and then was further excavated in 2008. In 2006, excavations in Area C revealed a thin charcoal layer (Event 868) north of the hearth, but at that early time in the excavation of the site, there was no clear indication of its being a structure. When all of the charcoal events from the last three years of excavation were linked together in 2008, the footprint of a wooden structure of roughly 6x6 m was created (from now on Feature 1248). There seem to be charcoal layers at two different depths, hence at least two successive structures. There were not enough artefacts recovered from these structures to be able to date them precisely. According to the stratigraphy, they were probably built during the first half of the 18th century. The northern and southern limits are not yet clear.

Directly under the burnt structure (or structures), excavators recorded a layer of pebbles and fine pebbles in a brown to dark brown loam with a few pieces of charcoal and nails on the surface (Event 1246). This layer touches the slabs of stones (Feature 1237) on which the hearth feature rests. The presence of a great quantity of nails and some small pieces of charcoal on the surface of Event 1246 suggests that the

structure collapsed directly on top of it when it burnt down. A substantial amount of faunal remains was found throughout this event, with the greatest concentration directly in front of the stone hearth.

Two main hypotheses concerning the nature of the burnt structures can be considered. In 2007, one of the structures was interpreted as a possible high status cabin, which could have housed a captain or other officers. This was mainly based on the discovery of luxury items, such as stemware and glass tumblers, as well as a gold-gilded button. As will be argued in Chapter 5, the faunal remains recovered in association with the structure, particularly those from under the burnt structures, follow that interpretation. The second hypothesis is that it could have been a cookroom, where food was cooked and where the fishermen were fed. This is mainly based on the discovery of the hearth feature (Feature 1233) in 2008 and on the relatively large dimensions of the wooden structure. Further excavations in this area of the site might shed light on the nature of this feature. However, in this project, the first hypothesis is favoured and will be argued in more details in Chapter 5.

The midden-type deposit under the burnt structures is, for the moment, interpreted as a working floor or a sub-floor for the structures. Apart from a few CEW sherds and some pipe stems, this deposit contained almost no artefacts. In general, the bones are in very good condition; some of the cod vertebrae still have their complete ventral and dorsal spines. Some fragile cod ribs were also preserved. Even if the fragments are very well preserved, most of them are still fragmented and are from small elements (pig phalanges, hare skull fragments and cod and bird

bones). It is possible that one of the burnt events represent a wood flooring, even though no clear planks pattern have been discovered. The underlying layer of pebbles and fine pebbles could be the subfloor to level the terrain. Small bones could have fallen through the cracks of that floor. This context is the only sealed context rich in faunal remains on the site, mainly because the burnt structure covered it and was not disturbed by subsequent occupations (see Appendix 1 for list of events).

2.2.3 Mid 18th-Century Midden-Type Deposit (EF4)

At the seaward (west) end of the burnt structure, Brown excavated a deposit in 2007 (Event 1059 and 1063; see Appendix 1) containing a lot of material culture and faunal remains. The content of this event could possibly result from the discarding of household refuse, related to the occupation of one of the burnt structures (Feature 1248). The event continues westward almost to the active beach, but becomes thinner and loses its integrity the closer it gets to this beach.

While REW such as painted and blue shell-edged creamware and transfer print pearlware were discovered near the upper surface of the event, the remainder of the deposit contained mostly 18th-century material, such as Breton CEW, Ligurian CEW, Brown Faience TGEW, Normandy CSW, and a few pipe bowls. Among these were a bowl with the Freemasons emblem and another pipe bowl with the letters "T" and "D" on each side of the spur, both of which can be dated to the late 18th to early 19th century (Walker 1977). A Dutch pipe stem, found in Event 1063, is rouletted and probably dates from the late 17th century. While the dates from the artefacts range from the late 17th to early 19th century, the great majority of artefacts

date from the 18th century. The stratigraphic position of the deposit also supports this dating, which could be between 1725 and 1775 (Pope, personal communication).

2.2.4 Late 18th-Century Working Area (EF5)

Just over the boat ramp (Feature 1021; see Appendix 1), a layer of pebbles and angular stones with a great quantity of nails was uncovered. Most of the nails are bent (resulting from planks removal), which supports the idea that this was a place where fishing boats were brought out of the water and repaired (Pope *et al.* 2007). This context, which is composed of Event 1011 and 1019, also produced a substantial amount of faunal remains. The only clear difference between Event 1011 and 1019 is that the latter had some small seashell fragments on its surface, while the other did not. Together, they cover the boat ramp feature.

Artefacts found in this context include some REW creamware, REW pearlware, CEW, Normandy CSW, Brown Faience TGEW, pipe stems, lead casting waste, cod dabbers, light green bottle glass, musket balls, fish hooks and a lot of nails. It underlies the Anglo-Newfoundlander context of c. 1790-1815 (Event 1005/1009). The layers over the boat ramp contained some creamware which was produced after 1762 (Noel Hume 1969; Miller 1991). A small cross pendant was also found on the same level as the boat ramp, also dating to that period (Burns 2009). Together, the assemblage indicates a tight chronological range situated in the second half of the 18th century, likely 1762-1790.

2.3 Anglo-Newfoundlander Period (c. 1790-1815) (A-N)

Excavations in Area C revealed at least two events that can be associated with an Anglo-Newfoundlander occupation (for a complete list of events, see Appendix 1). In 2007, many sherds of a creamware jug were found, with a transfer print image of Admiral Nelson with the inscription "England Expects Every Man to do his Duty" over the dates of his death (Figure 12). This jug provides a terminus post-quem of 1805 and excellent evidence of the presence of Anglo-Newfoundlanders on the site at that period. Because parts of the jug were found in Event 1001, 1005 and 1009, and the stratigraphic layers are heavily disturbed near the surface, only the last two can be linked with enough confidence to a Anglo-Newfoundlander context.

Luckily, Event 1005 and 1009 were among the richest in terms of faunal material. While they are not concentrated in a midden-type deposit like some of the Earlier French events, they are spread fairly evenly throughout Area C. One way excavators were able to detect Event 1009 was by the large number of cod bones on the surface of the layer. The presence of a clear surface of cod bone scatter may indicate that the Anglo-Newfoundlander used Area C as a processing area.

Apart from the clear chronological marker of the transfer-print Nelson creamware jug, most of the other ceramic types and smoking pipes support a late 18th-early 19th-century English occupation. Many sherds of REW were recovered, such as creamware (c.1762-1820) and pearlware (c.1780-1840) (Noël Hume 1970). One English pipe stem found in Event 1009 reads "MORGAN". The Morgan pipe maker could be either R. Morgan or W. Morgan, both from Liverpool and

Figure 12. Creamware jug with parts of the inscription "England Expects Every Man to do his Duty", terminus post-quem of 1805. (Courtesy of A. St John)

manufacturing smoking pipes in the early 19th century (St John 2008: 18; Walker 1982:69). Another bowl found in Event 1005 has a TD maker's mark on the sides of the spur, which is dated from 1780 to 1850 (Walker 1977). While most of the artefacts point towards a late 18th- to early 19th-century dating, some other artefacts indicate that the upper layers have been disturbed by the intense activities occurring in Area C. An English pipe bowl with a "mulberry" motif was found in Event 1005 and is dated from the mid to late 17th century (St John 2008: 17; Oswald 1975: 90). Also, French tin-glazed earthenware, such as Faïence de Rouen (from 1740 to the 19th century) and some Normandy stoneware sherds were found throughout Event 1005 and 1009. Nonetheless, the material culture associated with these two latter events are primarily dated to the late 18th-early19th-century period, which corresponds to the time at which the French interrupted their migratory fisheries.The earlier ceramics and smoking pipes are probably intrusive and might have been shovelled by fishing crews from other parts of the site. Such perturbation might have a significant influence on the results of the faunal analysis, and cannot be denied.

Finally, this context offers an interesting comparison to the French faunal assemblage. While the assemblage cannot be associated with a domestic midden-type deposit like some French deposits, it still offers a good comparative dataset to interpret differences in foodways between the two groups of fishermen.

2.4 Later French Period (19th Century)

This context is the hardest to define in the Area C waterfront, mainly because of the concentration of activities and displacement of soil, resulting in a mixing of stratigraphic layers. In Area C, mending of ceramic vessels has established that the events of at least the first 30 to 35 cm are heavily disturbed (Amy St John, personal communication). Thus, linking the faunal material excavated from those events to a certain cultural occupation (i.e. Later French or Anglo-Newfoundlander) is difficult. In Area C, the only events which can be associated with a sufficient degree of certitude to the Later French period are the sod and the underlying layer of organic soil. In addition, the 19th-century bread oven in Area A excavated in 2007 offers a significant assemblage of faunal material to discuss (Godbout 2008, Noël 2008).

2.4.1 Later French Events (Area C) (LF1)

In most of Area C, the top two strata can be associated with a certain level of confidence with a 19th-century French seasonal occupation (see Appendix 1 for a list of events included). The sod layer contains evidence of the last period of occupation of the site, as the site was abandoned by French migratory fishermen at the end of the 19th century. However, in most of these upper contexts, only very little faunal material has been recovered. This could be explained in part by taphonomic factors. When the site was definitely abandoned in the 1890s, the bones were left on the surface, exposed to the elements, to carnivore and rodents gnawing and to root action. Over a hundred years of exposure to these taphonomic processes thus greatly reduces the chances of preservation of the deposited assemblage.

The difficulty posed by the clear definition of 19th-century French contexts and the lack of faunal remains in the top two layers greatly limit the interpretation of French cod fishermen foodways of the late 19th century. Nevertheless, the Area A bread oven which was partly excavated in 2007 offers a small but interesting faunal assemblage to interpret 19th-century French food consumption.

2.4.2 19th-Century Bread Oven (Area A) (LF2)

In 2007, Godbout excavated the east and south parts of the bread oven mound (Godbout 2008; Figure 13). Phase II, associated with the construction and use of the bread oven, yielded the great majority of faunal remains. Phase II was defined at different depths throughout the Area A bread oven: it lies between the present-day surface and 40 cm below surface in the north-eastern limit of excavation and from 17 to 97 cm below surface at the north-western end (Godbout 2008: 143). According to Godbout, this phase relates to the construction, use and destruction of the bread oven. Of particular interest to the present project are Events 1052, 1060, 1068 and 1072, which are all associated with the use of the bread oven. Sherds of a Huveaune CEW pot at the interface between Events 1052 and 1068 attest to a secondary use for the bread oven for the cooking of stews or pot-pies for the fishermen (Godbout 2008: 156). These events were also the most productive in term of faunal remains. From the various types of refined earthenware found, it seems that the oven was in use at some time between 1815 and 1875 (Godbout 2008: 159).

Figure 13. EfAx-09, Area A, Feature 22 during excavation, showing the sheltered working area. (Source: Godbout 2008: 115)

2.5 General Comments on the Contexts

The fact that Area C was used for over 250 years means it was subject to significant stratigraphic disturbance. Three years of excavation provide insight into the shifting dynamic of space in the fishing room. Area C, at different periods, was a burial place, a domestic area, a boat repair area and a processing area. It is not surprising that many contexts have been disturbed, as soil was dug into earlier areas of the site to level the terrain to construct the cookroom or cabin, the boat ramp and other features.

Disturbance certainly has an effect on the faunal assemblages, and may obscure certain culturally-specific consumption patterns. It is for this reason that the author selected the clearest contexts for faunal analyses. A large amount of faunal material recovered from Dos de Cheval was not included because it could not effectively be linked to specific contexts or phases of occupation. Although this may be partly biased by taphonomic processes, I believe that the contexts chosen are valid assemblages and useful for the interpretation of changing foodways through time, from the French and Anglo-Newfoundlander perspective.

CHAPTER 3: METHODOLOGY

In order to approach the research questions formulated in Chapter 1, various methods of analysis have been applied to the faunal assemblages. This chapter first explains the field recovery techniques and sub-sampling of the faunal remains, as well as methodologies for identification of faunal specimens. Then, it presents the five different analytical methods that have been applied to the faunal specimens: 1) taxonomic abundance, 2) body part representation, 3) butchery patterns, 4) age profiles, and 5) taphonomic processes. The importance and relevance of these methods in answering the research questions are discussed. Finally, the use of a variety of historic documents to approach the research questions is considered.

3.1 Sampling Methods and Recovery Techniques

The faunal remains analyzed for this project come from three years of excavation, from 2006 to 2008. At the beginning of the Petit Nord project, no clear sampling strategy for faunal remains was outlined prior to excavation. During the 2006 excavation, a judgmental selection of the bones was undertaken, where faunal remains were collected at the discretion of the excavator and some small or poorly preserved bone fragments were thrown in the back dirt pile. This is an arbitrary and highly subjective approach that may lead to a great deal of lost information (O'Connor 2000: 30). However, most of the soils were screened through a 1 cm mesh screen, in order to recover small artifacts and, sometimes, faunal remains.

During the second year, the archaeologists excavating the site collected all the bones and sieved all of the soil through a 1 cm mesh screen. This sampling technique can be categorized as *all from all*, which is the recovery of all bone fragments from the entirety of each excavated context (O'Connor 2000: 28-29). The resulting faunal assemblages would reflect the well-known biases associated with the use of coarse screen mesh size, which have been extensively documented (e.g. Shaffer and Sanchez 1994; Shaffer 1992; Thomas 1969). Because sieving with fine-mesh screens is expensive and time-consuming, 1/4" mesh screening has become the "industry standard" recovery method on many North American archaeological sites (Shaffer 1992: 129). At Dos de Cheval, we needed to use a 1 cm screen because the soil was too stony for a 1/4" screen. It is believed that the use of the 1 cm screen size might have affected the amount of small fish elements (i.e. caudal vertebrae, spines, etc.) and small bird species bones (i.e. jays, curlews, etc.) recovered.

The sampling strategy for 2008 followed that of the 2007 season, so that both samples can be lumped together. Soil samples have been taken where appropriate and were sieved in the laboratory using a 1/8" screen (James 1997). The resulting coarse and fine material was carefully scanned for any fragments that would have been missed by the sieve. The screening of those samples confirmed that most of the faunal remains lost from the use of 1 cm screen were very small unidentifiable fragments of mammalian and bird bones, but especially small unidentifiable fragments of fish bones.

Despite the biased character of the 2006 faunal assemblage, it will be considered for the calculation of the taxonomic abundance, skeletal part frequencies, age and butchery patterns. It will not be used for the study of taphonomic processes, as this requires the recovery of all bone fragments, both the best and worst preserved. The faunal collection from 2006 was analyzed by Lindsay Swinarton (2007).

3.2 Laboratory Methodology

The mammalian and fish fauna have been analyzed using the zooarchaeological reference collection of the Archaeology Unit at Memorial University, and the collection of the zooarchaeology laboratory at Université Laval. The bird specimens from the collection were analyzed at the Canadian Museum of Nature Zooarchaeological Identification Centre (ZIC), in Aylmer, Québec. They have an extensive collection of birds which covers most of Canada's avian fauna. Some hard to identify families of birds (e.g. ducks) are also arranged synoptically to facilitate identification. Basic osteological reference manuals were also used in the lab to guide identification (Cannon 1987; Gilbert 1990; Gilbert *et al.* 1994). Butchery marks, metal corrosion, combustion marks and any other relevant information were recorded during the identification process (Lyman 1994b). For purpose of efficiency and consistency, an oblique source of lighting was used throughout all the identification process in order to better perceive modifications on the bones.

Identification to the most precise taxonomic level was made for all the specimens. For the mammals, the bones were sometimes too fragmentary to be attributed to a specific species. In these cases, the thickness of the cortex, the porosity and the general morphology of the bone served as indicators for general size categories: small, medium, medium-large and large mammals (i.e. Landon 1996a; Ostéothèque de Montréal 1998). The Small Mammal category includes animals such as voles, mice, squirrels and rats. The Medium Mammal category comprises species such as rabbits and hares, beavers and foxes. The Medium-Large Mammal group includes species such as pig, sheep, goat and small deer. Finally, the Large Mammal group comprises species such as cattle and caribou. When the bones were too fragmented to be attributed to a single size group, they were identified as Indeterminate Mammal. These categories are fairly subjective, but they give some indication as to the size and the possible species of the specimen and are useful when comparing the composition of different assemblages. For certain small fragments, identification to the taxonomic order (mammal, bird, fish) was not possible. These fragments are most often ribs or very small fragments of vertebrae of small or medium mammals (rat, hare, etc.) and were identified as Indeterminate.

Because of the great number of fish remains collected on the site, a systematic sub-sampling method was implemented in the lab (Jones 2002). Half of the 1 m square units dug in 2007 and 2008 in Area C had their fish remains identified. This permits an analysis of the vertical distribution of fish remains. In particular, the skeletal part frequencies of cod allow interpretation of changes in the use of space in

this area, diachronically. Because of the different sub-sampling strategy implemented for fish remains, they will be presented in a different table, as the abundance of fish cannot be compared with the rest of the assemblage.

3.3 Zooarchaeological Analysis Methods

In this section, the different methods used on the faunal specimens are described. The discussion of these methods highlights their relevance for answering the research questions.

3.3.1 Taxonomic Abundance

Provisioning systems consist of the mechanisms that function to bring resources to the fishing station by import from Europe, by exploitation of the surrounding environment or by trade with Anglo-Irish settlers. The nature of the provisioning systems can be interpreted, in part, by the taxa represented in the faunal assemblages.

In order to minimize the biases inherent to different quantification methods, the abundance of faunal remains in this project is calculated using two different techniques: Number of Identified Specimens (NISP) and Minimum Number of Individuals (MNI) (Cruz-Uribe 1988; Grayson 1984; Lyman 1994a; Reitz and Wing 1999). The NISP is the number of bone fragments identified in an archaeological assemblage to a certain taxonomic level (species, family, order or size group). It is an

observational unit; it is empirically based and directly measurable and requires no manipulation of the raw data (Lyman 1994a).

The MNI count is a derived unit, mainly because of the various criteria used by researchers to calculate this number (Lyman 1994a). There are different methods for calculating the MNI. Some researchers sort elements by symmetry (right/left), then take the greatest frequency of one or the other side (e.g. 3L/5R humerii = MNI of 5). Others do not distinguish right from left, but just count the total number of elements and divide it by two. This can be accurate in a large assemblage, but can introduce biases in a small one. Others use matching, which is the use of size, sex or age criteria to determine whether two bones could come from the same individual (Lyman 1994a: 37). The latter is the one used in this project as it provides a more accurate representation of the MNI, especially when samples are small.

The NISP count, while easily produced and reproduced, can be inflated by a highly fragmented assemblage. It also tends to over-emphasize the importance of fish relative to mammals and birds, as fish have approximately three times as many bones (500-600) (Klein and Cruz-Uribe 1984: 24-25). MNI can circumvent NISP problems, as it is not affected by fragmentation or anatomical bone count. However, MNI is affected by the aggregation of faunal samples from different excavation units, and it also overestimates the count of rare species (Klein and Cruz-Uribe 1984: 26-29).

These methods have advantages and problems. Nevertheless, when used together and compared, they can provide a fairly representative account of the faunal

assemblages found on the site. Taxonomic abundance, which is often the first step towards more sophisticated analysis, will be used to answer the question relating to the exploitation of the local food resources. It will shed light on the wild species used and the extent to which they complemented the diet of the fishermen's provisions. Taxonomic abundance will also provide some information regarding the supplying of fishing vessels, and the import of meat or live animals from France. Finally, the count of domestic and wild animals from the French and Anglo-Newfoundlander contexts will be contrasted in order to compare subsistence strategies.

3.3.2 Body Part Representation

Body part representation will be established by the use of the %MAU method (% Minimum Animal Units) (Lyman 1994a: 42; Ringrose 1993; cf. Binford 1984). First, for this project, the MNE (minimum number of elements) has been considered to be the minimum number of complete skeletal elements of a taxon (i.e. pig, cattle, etc.). When counting the MNE, the element, portion, percent present, symmetry, fusion state and provenience were taken into consideration (Landon 1996a: 47).

The MAU must first be calculated with the following formula, where "$_e$" identifies a given skeletal element:

$$\frac{MNE_e}{\text{Number of times } _e \text{ occurs in one complete skeleton}}$$

The MAU_e is then normalized to the %MAU. It is calculated by multiplying the MAU of a given element by 100 and dividing the result by the maximum MAU observed in the assemblage. It can be easily expressed as:

$$\frac{(MAU_e)100}{\text{Maximum MAU observed in an assemblage}}$$

The %MAU scales the value from 0 to 100 (Lyman 1994a: 57). This permits comparison of MAU values between assemblages of different sizes.

This technique offers some insights into the transportation of meat products on the site. For example, supposing that barrelled cured pork was brought to the site by French fishermen, we should expect a greater proportion of limb and axial bones, but a smaller proportion of bones with low meat value, like heads and lower feet. The archaeological examples of salt pork cask, and historical documents will help create a pattern of expected bones likely to be found derived from cured meat, which will then be compared to the archaeological evidence (English 1990; Coy *et al.* 2005; Morris 1820). Applied to cod remains, body representation can also help interpret the changes in function of different parts of the site. For example, in processing areas, one would expect to recover more head elements and caudal vertebrae. However, in a domestic deposit, the proportion of abdominal and anterior caudal vertebrae and appendicular elements such as cleithra, postcleithrum and scapula (processed cod), or bones from all the body (fresh cod) would be expected to be higher (cf. Barrett 1997).

3.3.3 Butchery Patterns

Each specimen with identifiable butchery marks was recorded, with the location, orientation, and type of marks portrayed (e.g. Crader 1990, Landon 1996b; Lyman 1977, 1987). The butchery marks were represented here on individual line drawings, which were then condensed into a composite drawing of each element to examine and interpret overall butchery patterns for the different contexts analyzed.

Lyman (1987: 252) wrote that "butchery consists of a set or series of sets of activities that are directed towards the extraction of consumable resources from an animal carcass" where "consumable is broadly construed to mean all forms of use of carcass products." The butchery process can be seen as three different steps. The primary butchery includes the initial slaughter, carcass preparation and evisceration. Secondary butchery is the division of the carcass into major anatomical parts, and tertiary butchery is the final division taking place before and during consumption (Landon 1996b: 58-59; Lyman 1978: 5; Rixon 1989: 49). Five different types of butchery marks can be differentiated based on morphological characteristics (Landon 1996b: 59; Reitz and Scarry 1985; Crader 1990). Landon (1996b: 59) describes them as follows:

1) scrape, a shallow straight mark that minimally gouges the surface;

2) cut, a straight narrow incised line, deeper than a scrape;

3) chop, where a small wedge of bone has been removed;

4) shear, a straight edge left where a bone has been chopped through;

5) saw, a series of parallel striations left by a toothed cutting tool.

To support the identification of a mark as a butchery mark, three criteria are normally used: mark morphology, redundancy and purposiveness (Lyman 1987: 260-270). Redundancy relates to how often an element is marked in the same area, while purposiveness implies some potential anatomical reason for a cut mark in that specific location. With this approach, the issues of redundancy and purposiveness raise the following questions: 1) Where are the butchery marks clustered? 2) What purpose would butchery in that area have served? (Landon 1996b: 59)

The study of butchery marks will provide detailed information about certain butchery practices that can be related to a particular use of the animal (e.g. pork curing, extraction of marrow, transforming seabirds into bait, etc.), the use of certain tools for processing or preparing meat, or distinguishable culturally-specific practices (perhaps French versus Anglo-Newfoundlander). Butchery units and marks will also shed light on the type of cuts prepared on the site. Do they represent pieces of meat cooked for a communal meal, or are they individual portions, perhaps reserved for the officers of the fishing room?

3.3.4 Age Profiles

The uses of domestic animals and aspects of animal husbandry strategies can be interpreted from the slaughter ages. For example, raising cattle solely for meat, the optimum age for slaughter is less than two years old, when the animal has reached its full size (Landon 1997: 55). If cattle are being raised for draft or dairy purposes, a

larger proportion of animals of older ages would be kept alive. For sheep, if they were kept for wool, older animals are expected to be found. If they were slaughtered to be sold on the market (as lamb) they would be of a younger age (Bowen 1998: 140; Landon 1996c; Landon 1997). Pigs normally reach their maximum meat yield between one and two years old, after which they start to be less profitable because they are eating without putting on more weight. They are typically raised only for their meat, and differences in slaughter ages relate more to general husbandry practices than to alternative uses of the animals (Landon 1997: 55).

In the assemblages from Dos de Cheval, animal slaughter ages will be determined by patterns of dental eruption and wear. The sequence and timing of the eruption of deciduous and permanent teeth can indicate the age of death of animals (Grant 1982; Wilson *et al.* 1982). Data on teeth eruption are available through veterinarian and archaeological sources. One of the problems for archaeology is that the age estimate derived from veterinary data are for the gingival emergence, and not the formation of the tooth in the crypt or the actual eruption of the tooth through the bone. These are all different stages in the process of eruption. As pointed out by Hillson (2005: 212), in order to be useful to archaeology, eruption needs to be considered as part of tooth formation and development. The stage of development is normally easily determined, but age assignation is more of a challenge. The low quality of modern analogue data sometimes makes comparison with archaeological specimens problematic. However, zooarchaeologists can still estimate age at death to a certain level of certainty.

Almost all of the mandibles and maxilla collected at Dos de Cheval come from pigs. Therefore, particular attention is directed towards pork husbandry. Were fishermen killing pigs in order to maximize meat production? Bull and Payne (1982) published a very insightful and comprehensive study, including eruption data from nine different sources, for domestic pigs and wild boar (cf. Reiland 1978, Habermehl 1975, Silver 1969, Sisson and Grossman 1966, Brown 1902, Owen 1866/8, Lesbre 1897/8, Briedermann 1965 and Matschke 1967). They also applied these data to a collection of pig mandibles from Turkey, classifying them in four age groups (7-11, 19-23, 31-35 and older than 35 months). Similar groupings are attempted for the mandibles and maxillae from Dos de Cheval.

When possible, age will also be estimated from epiphysial stages of post-cranial elements for pig and caprines. There were too few cattle remains to attempt any age analyses. For domesticates, researchers have recorded the age at which the epiphysis fuses with the diaphysis (shaft) of long bones (Chaplin 1971; Silver 1969). These data can be used to estimate the age at death of archaeological specimens. Again, the comparison with modern samples is somewhat problematic (O'Connor 2006: 4). The epiphyseal closure times for pig and caprines were taken from Amorosi (1989), a manual compiling ageing data from different sources (cf. Bruni-Zimmerl 1951; Lesbre 1897; Schmid 1972; Silver 1969; Smith 1966). This aging information will complement the more accurate tooth eruption data for pig, and provide some information for the slaughtering patterns of caprines. Finally, age profiles will provide information that will be used to interpret the changing slaughtering practices

that occurred on the site at different periods of occupation, and possibly between the French and Anglo-Newfoundlander fishermen.

3.3.5 Taphonomic Processes

While interpreting the assemblages, particular attention will be focused on taphonomic processes and their effects on the assemblage. Analysis of the bones and associated artefacts will provide information on site formation and post-depositional processes which affected the assemblages. Evidence of gnawing and weathering of bones can provide information on the relative amount of time that a deposit was exposed to the weather, rodents and carnivores. Anthropogenic modifications on bones, like charring and butchery, can provide supplementary information for the interpretation of certain contexts (see Lyman 1994b).

Taphonomic processes cannot be put aside when it comes to the analysis of skeletal part frequencies. It has been demonstrated that the preservation of certain skeletal elements over others is directly related to bone density. The general rule is that a denser bone would be expected to survive longer than a porous bone (Lyman 1994b: 234-258). When discussing skeletal part frequencies, particular attention will be directed towards assessing the biases resulting from variable bone density.

3.4 Historical Documentation

Historical sources documenting the cod fisheries play an important role in the exploration of the different factors affecting food consumption, as these factors are

related to the economic, political, and social context of the industry. Archival and contemporary works in social and economic history of the fisheries provide an account of the specific social organization of the fishing stations, the trade networks and the economic and political situation of the 17th-to 19th-century fishing industry in Newfoundland (e.g. Brière 1990; de la Morandière 1962; Pope 2003; Pope 2008a).

Food, to the extent that it is perceived as a common and trivial subject, is sometimes overlooked. Fortunately for this study, food supplies were an essential part of successful fishing on the coast of Newfoundland. This means that we have historical accounts, provisioning contracts and governmental regulations concerning seamen's diet.

Authors from the 17th and 18th centuries who wrote about the organisation of the dry cod fisheries left us detailed and revealing information about the nature of food consumption during the voyage and on shore. Nicolas Denys, a French merchant, explorer, colonizer fishing master and a dominant figure in 17th-century Acadia, left, in his *Histoire Naturelle Des Peuples, des Animaux, des Arbres & Plantes de l'Amerique Septentrionale, & de ses divers Climats* (1672), a detailed description of the sedentary, salted and dried cod fishery. In various parts of his text, he discusses not only the type of food brought in ships, but also the species hunted, the sharing of food, and the separation between ordinary fishermen and officers, when they sat down for dinner in separate spaces. French naval engineer and botanist, Duhamel du Monceau gave detailed information about the diet of cod fishermen in his *Traité des*

pêches, et histoire des poissons (1769). Du Monceau also offers some remarkable representations of fishing stations, fishing tools, anatomy of fishes, etc.

From the 16th century onward, the provisioners who were victualling fishing vessels bound for the cod fisheries kept records of their transactions. Some of these contracts have survived in the municipal, regional and national archives in France. Several of these contracts are available through the Library and Archives Canada in Ottawa and the *Bibliothèque et Archives Nationales du Québec* in Québec City. Archival documents can also provide information on the content of ship cargos and provisioning of the fishing crews.

Finally, to establish which indigenous species were present and used in the region from the 17th to 19th centuries, both historical and ecological sources are consulted. A particularly informative account of the Petit Nord fauna was written by Carpon (1852), an experienced surgeon who worked many years on French cod fishing vessels coming to the Petit Nord. Moreover, some ethnological sources from France, documenting traditional food production (and procurement), distribution, preparation, consumption, and disposal, are explored (e.g. Peeters 1980). These sources may provide information about some specific ethnic butchery practices.

CHAPTER 4: RESULTS

During the three years of excavations at Dos de Cheval, over 10,000 animal bones were recovered from different areas of the site. About 75 percent of the faunal assemblage comes from Area C, the most extensively excavated and productive area of the site.

This chapter presents the results of the analysis of faunal assemblages from three phases of occupation, as discussed in Chapter Two. In the Earlier French period (17th-18th century), five different deposits are examined. The Anglo-Newfoundlander period (c.1790-1815) is represented by only one thick deposit. The Later French period (19th century) has two deposits: the bread oven in Area A and the top two strata in Area C. The presentation of the data is organized according to the four methods implemented: taxonomic abundance, body part representation, butchery patterns and age profiles. Finally, the anthropogenic and natural taphonomic processes affecting the bones are described and analyzed.

4.1 Taxonomic Abundance

This section presents the taxonomic representation and the abundance of faunal remains, using the NISP (Number of Identified Specimens) and MNI (Minimum Number of Individuals) quantification methods. The results are presented chronologically, from the oldest to the most recent context. Two tables are presented:

the first one with the mammalian, avian and mollusc fauna, and a second one with the fish remains. As explained in Chapter Three, the great amount of fish bones made sampling of the fish remains necessary. The resulting fish data could therefore not be integrated in the mammal and avian table, as they were sampled differently.

4.1.1 Earlier French Period (17th -18th centuries)

4.1.1.1 Late 17th- to Early 18th-Century Fish Processing Midden (EF1)

This context is composed of Events 1081 and 1203. The nature of this deposit is unclear. It could have served as a midden for fish processing refuse or it may also partly represent domestic refuse. Mammalian fauna represented 80 percent and avian fauna 20 percent of the assemblage (Table 4.1). A significant number of fish bones have been sub-sampled from this context (n=206). No molluscs were identified.

Pig was the most abundant mammal (36 percent), followed by sheep/goat (19 percent) and caribou (2 percent). Medium-Large and Large mammals account for 23 percent of the assemblage. Only 2 percent of the assemblage was from the Indeterminate Mammal category. For the avian remains, Chicken were the most abundant (8 percent), followed by Geese (4 percent), gulls (4 percent), Black-legged Kittiwake (2 percent) and a plover species (2 percent).

Table 4.1 Taxonomic abundance of mammal, bird and mollusc fauna from EfAx-09, Area C, by period. NISP count with MNI in parentheses.*

		EARLIER FRENCH (c.1650-1790)					ANGLO-NEWFOUNDLANDER (c.1790-1820)	LATER FRENCH (c.1820-1900)	
Common Name	**Scientific Name**	**EF1**	**EF2**	**EF3**	**EF4**	**EF5**	**A-N**	**LF1**	**LF2**
MAMMALS									
Pig	*Sus scrofa*	19 (1)	20 (1)	102 (2)	53 (3)	107 (2)	106 (3)	23 (2)	-
Sheep/Goat	*Ovis aries/Capra hircus*	10 (1)	3 (1)	4 (1)	4 (1)	17 (2)	21 (1)	6 (1)	-
Sheep	*Ovis aries*	-	-	-	-	1 (1)	-	-	-
Cattle	*Bos taurus*	-	2 (1)	-	1 (1)	10 (1)	5 (1)	-	-
Caribou	*Rangifer tarandus*	1 (1)	1 (1)	-	2 (1)	-	1 (1)	-	-
Arctic Hare[1]	*Lepus arcticus*	-	-	8 (*)	-	-	-	-	-
Hare Family	*Leporidae*	-	-	22 (3)	-	-	-	-	-
American Black Bear	*Ursus americanus*	-	-	1 (1)	-	-	-	-	-
Meadow Vole	*Microtus pennsylvanicus*	-	-	1 (1)	-	-	-	-	1 (1)
Medium Mammal	Medium *Mammalia*	-	-	6	-	-	1	2	-
Medium-Large Mammal	Med-Large *Artiodactyla*	11	20	36	25	75	105	9	4
Large Mammal	Large *Artiodactyla*	1	1	1	2	1	4	2	-
Indeterminate Mammal	*Mammalia*	1	6	71	7	85	191	25	-
MAMMALS TOTAL		**43 (3)**	**43 (4)**	**252 (8)**	**94 (6)**	**298 (6)**	**435 (6)**	**67 (3)**	**5 (1)**

BIRDS									
Chicken	*Gallus gallus*	4 (1)	1 (1)	31 (2)	5 (1)	21 (2)	34 (3)	4 (2)	-
Domestic Turkey	*Melleagris gallopavo*	-	-	-	1 (1)	6 (1)	-	-	-
Willow Ptarmigan	*Lagopus lagopus*	-	-	12 (2)	-	-	-	-	-
Galliformes	*Galliformes*	-	-	1	-	-	-	-	-
Common Raven	*Corvus corax*	-	-	9 (2)	-	-	-	-	-
Grey Jay	*Perisoreus canadensis*	-	-	3 (1)	-	-	-	-	-
Passerine	*Passeriformes (Order)*	-	-	-	-	-	-	1 (1)	-
Hudsonian Godwit/Eskimo Curlew[2]	*Limosa haemastica/Numenius borealis*	-	-	4 (3)	4 (2)	1 (1)	12 (3)	-	-
Pectoral Sandpiper	*Calidris melanotos*	-	-	1 (1)	-	-	-	-	-
Plover family	*Charadriidae*	1 (1)	-	-	-	-	-	-	-
Sandpiper Family	*Scolopacidae*	-	-	11	-	-	-	-	-
Great Black-backed Gull	*Larus marinus*	-	1 (1)	-	-	-	1 (1)	5 (1)	-
Herring Gull	*Larus argentatus*	-	-	15 (1)	5 (1)	-	1 (1)	-	-
Ring-billed Gull	*Larus delawarensis*	-	-	4 (1)	-	1 (1)	-	-	-
Black-legged Kittiwake	*Rissa tridactyla*	1 (1)	-	3 (1)	-	17 (2)	15 (3)	-	-
Gull Family	*Laridae*	2	-	8	2	2	6	-	-
Black Guillemot	*Cepphus grylle*	-	-	1 (1)	-	5 (1)	3 (1)	-	-
Common Murre	*Uria aalge*	-	1 (1)	1 (1)	-	-	-	-	-
Atlantic Puffin	*Fratercula arctica*	-	-	1 (1)	-	-	-	-	-
Gulls, Waders and Auks	*Charadriiformes*	-	-	6	-	-	-	-	-
Common Loon	*Gavia immer*	-	-	1 (1)	-	-	-	-	-
Red-throated Loon	*Gavia stellata*	-	-	2 (1)	-	-	-	1 (1)	-
Goose sp.	*Anserinae*	2 (1)	-	-	2 (1)	5 (1)	-	-	-
Hooded Merganser	*Lophodytes cucullatus*	-	-	-	-	-	-	1 (1)	-
Common Eider	*Somateria mollissima*	-	-	2 (1)	1 (1)	1 (1)	6 (1)	1 (1)	-
Harlequin Duck	*Histrionicus histrionicus*	-	-	-	-	-	3 (2)	-	-
Teal	*Anas crecca/Anas discors*	-	-	-	-	-	-	1 (1)	-

Seaduck (Scoter sp.)	*Melanitta (genus)*	-	-	1 (1)	-	2 (1)	-	-	-
Small-sized Duck[3]	Small *Anatidae*	-	-	4	-	-	2	1	-
Medium-sized Duck[4]	Medium *Anatidae*	-	-	8	-	5	6	-	-
Large-sized Duck[5]	Large *Anatidae*	-	-	2	1	3	4	2	-
Small Bird sp.	Small *Aves*	-	-	15	-	2	2	-	-
Medium Bird sp.	Medium *Aves*	-	1	18	3	2	8	1	-
Large Bird sp.	Large *Aves*	-	-	3	-	-	-	-	-
Bird sp.	*Aves*	-	1	67	2	1	24	1	-
BIRDS TOTAL		**10 (4)**	**5 (3)**	**234 (21)**	**26 (7)**	**74 (10)**	**127 (15)**	**19 (8)**	**0**
MOLLUSCS									
Mussels	*Mytilus sp.*	-	-	78 (39)	-	-	-	-	2 (1)
Mollusca sp.	*Mollusca*	-	-	2	-	-	1 (1)	-	-
Gastropod sp.	*Gastropoda*	-	-	-	-	-	1 (1)	-	-
MOLLUSCS TOTAL		**0**	**0**	**80 (39)**	**0**	**0**	**2 (2)**	**0**	**2 (1)**
INDETERMINATE									
Bird or Medium	*Aves* or Medium								
Mammal	*Mammalia*	-	-	28	-	-	1	1	-
Indeterminate	Indeterminate	-	-	1	-	2	5	-	4
INDETERMINATE TOTAL		**0**	**0**	**29**	**0**	**2**	**6**	**1**	**4**
GRAND TOTAL		**53 (7)**	**48 (7)**	**595 (68)**	**120 (13)**	**374 (16)**	**570 (23)**	**87 (11)**	**11 (2)**

*Contexts from the 17th century and the 19th century contain very small amounts of faunal remains. The resulting patterns must therefore be considered carefully for interpretations. EF1 and EF2 = Late 17C-Early 18C; EF3 = Mid 18C Midden under Feature 1248; EF4 = Mid 18C Midden-type deposit; EF5= Late 18C Working Area; A-N = Anglo-Newfoundlander occupation; LF1 = 19C Working Area; LF2= 19C Bread oven use.

[1] The bones identified as Arctic hare have been included in the MNI calculation for the Hare Family.

[2] The Eskimo Curlew being practically extinct, no reference specimens were available for comparison at the ZIC. Most bones identified as Hudsonian Godwit could possibly be Eskimo Curlew.

[3] Small-sized ducks include species such as Mergansers and Teals.

[4] Medium-sized ducks include species such as Mallards and Black ducks.

[5] Small-sized ducks include species such as Common Eider or Kind Eiders.

Table 4.2 Taxonomic Abundance of Fish Fauna from EfAx-09, Area C, by period. NISP count with MNI in parentheses.

		EARLIER FRENCH (c.1650-1790)					ANGLO-NEWFOUNDLANDER (c.1790-1820)	LATER FRENCH (c.1820-1900)	
Common Name	**Scientific Name**	**EF1**	**EF2**	**EF3**	**EF4**	**EF5**	**A-N**	**LF1**	**LF2**
FISHES									
Atlantic Cod[1]	*Gadus morhua*	200 (31)	10 (1)	237 (6)	63 (2)	102 (3)	787 (31)	96 (5)	323
Cod family	*Gadidae*	-	-	-	-	9	-	-	-
Fish sp.	*Pisces (class)*	6	-	90	4	15	87	46	158
FISH TOTAL		**206 (31)**	**10 (1)**	**327 (6)**	**67 (2)**	**126 (3)**	**874 (31)**	**142 (5)**	**481**

EF1 and EF2 = Late 17C-Early 18C; EF3 = Mid 18C Midden under Feature 1248; EF4 = Mid 18C Midden-type deposit; EF5= Late 18C Working Area; A-N = Anglo-Newfoundlander occupation; LF1 = 19C Working Area; LF2= 19C Bread oven use.

[1] It is possible that some specimens identified as Atlantic cod belong to other fishes from the *Gadidae* family, such as haddock, ling, tusk or saithe.

Over 97 percent of the fish assemblage was composed of Atlantic cod, while only 3 percent were of fish remains that could not be identified to family (Table 4.2). There is however no indication that these bones belong to fish from anything but the cod family. From the cod head bones, there were at least 31 individuals represented in this deposit, which supports the idea of its being a fish processing midden. This assemblage presented a low variety of species and a high reliance on domestic mammals and birds.

4.1.1.2 Late 17th- to Early 18th-Century Midden-Type Deposit (EF2)

This context, composed of Events 1067, 1077 and 1083 (context EF2), produced a small faunal assemblage (n=53), where mammalian fauna account for 90 percent and avian fauna 10 percent of the assemblage (Table 4.1). Only a small amount of fish bones (n=10) have been identified in the samples (Table 4.2). No molluscs were collected. In order of importance, this context contained remains of pig (21 percent), sheep/goat (6 percent), cattle (4 percent) and caribou (2 percent). Medium-Large and Large mammals accounted for 44 percent, while the Indeterminate Mammals constituted 13 percent of the assemblage. Very few bird bones were found (n=5). The only fragments identified as species are of chicken, Great Black-backed Gull and Common Murre. The remaining two fragments belong to a Medium-sized bird and an indeterminate bird. Only ten fish remains were found, all belonging to cod. Like the previous context, this deposit contains a low variety of fauna, with a very high reliance on domestic mammals and birds.

4.1.1.3 Mid 18th-Century Midden Under Burnt Structure (EF3)

This deposit is one of the most interesting contexts on the site. Not only does it contain a large amount of faunal material but the variety of species, especially of wildfowl, is striking. It was found in a pebbly layer directly under the burnt cabin structure (Feature 1248) in Area C, with the bulk of faunal remains collected from the 2x2 m operation directly in front of the hearth.

This context contained 595 bone fragments, of which 58 percent were identified at least to the family. Mammalian fauna represents 42 percent of the total bone fragments, while the avian fauna is almost equal, at 39 percent (Table 4.1). Over 13 percent of the assemblage is composed of mussel shells, from which only the umbos were counted. Five percent of the bones could belong to a medium-sized mammal (i.e. hare) or a bird, or were too incomplete to identify to a class. A total of 327 fish remains were analyzed from this context.

Pigs are the most abundant mammalian species represented in this deposit, following the general trend of the other deposits. The second most abundant mammals are from the hare family of which some have been formally identified as Arctic Hare. The elements identified as "Medium Mammal" most likely come from undiagnostic fragments of hares. Some small hollow fragments of long bones in the "Bird or Medium Mammal" category could also belong to the hare family. The Newfoundland and southern Labrador variety of Arctic Hare (*Lepus arcticus bangsii*), also called the "mountain" hare, was once plentiful in Newfoundland (Dodds 1983: 513). Fishermen did not have to go very far inland from the coastal villages to trap

specimen in Canada was taken at Battle Harbour, Labrador on August 29, 1932 (Godfrey 1966: 144-145). The Pectoral Sandpiper is an uncommon autumn transient in Newfoundland (Godfrey 1966: 153). The specimens identified as Waders Family are from godwits or sandpipers, or other shorebirds that could not be formally identified.

All of the molluscs identified were mussels, probably blue mussels, which are very abundant on the Atlantic shoreline. Finally, 63 percent of the fish specimens were identified as cod, while the rest were too fragmentary to identify to species (Table 4.2). Two very small fish vertebrae were found, but could not be identified.

4.1.1.4 Mid 18th-Century Midden-Type Deposit (EF4)

This small midden-type deposit consisting of Events 1059 and 1063 provided a significant variety of taxa. In total, 187 mammal and bird remains were analyzed for this context. Mammalian fauna make up 78 percent of the assemblage, while the remainding 22 percent consists of avian bone fragments (Table 4.1). Sixty-seven fish bone fragments were sampled. No molluscs were identified. It is possible that shells were not collected during the excavation of these events.

Following the general trends on the site, pig was by far the most abundant species identified, representing 44 percent of the assemblage. Only four sheep/goat fragments (3 percent) and two bones (2 percent) of caribou were found. One cattle bone was identified, representing less than 1 percent of the assemblage. Medium-Large Mammal made up 21 percent of the assemblage, which might be pig, sheep,

goat or small cervid. Only two fragments of the Large Mammal category were found, and probably belong to cattle or caribou. Finally, seven bones were identified as Indeterminate Mammal, as they were too fragmentary to identify further. At least six different species of birds were identified. The domesticated fowl – chicken and turkey – made up 5 percent of the assemblage. The wild birds – gulls, Hudsonian Godwit/Eskimo Curlew, Goose and ducks – represented 13 percent of the assemblage. Five bird bones were too fragmentary to identify to family. Three of these belonged to medium-sized birds, such as Chicken, gulls, ducks, etc. Atlantic cod is, again, the most abundant fish species, accounting for 94 percent of the fish assemblage (Table 4.2). There is no indication that the six percent of unidentified fish does not belong to the cod family.

4.1.1.5 Late 18th-Century Working Area (EF5)

The layer over the boat ramp, apart from producing a lot of nails, offered a considerable faunal assemblage. From the artefacts recovered in it and its stratigraphic position, this French deposit probably dates from 1762 to 1790. In this deposit, mammalian fauna represent 80 percent of the assemblage, while the avian remains form the remaining 20 percent. Less than 1 percent of the remains could not be attributed to a class (Table 4.1).

Again, the pig bones form the majority of the assemblage (29 percent). Sheep/goat fragments make up 5 percent of the assemblage, with one fragment of occipital bone that could be identified as sheep. Cattle represent 3 percent of the assemblage, while less than 1 percent of the bones were attributed to the *Bovidae*

family, which includes sheep, goat and cattle. Many bones were too fragmentary to identify. Over 20 percent of the assemblage was composed of Medium-Large mammals, while the Large mammal category was represented by only one bone. Almost 23 percent of the bones were from indeterminate mammals. The domestic birds (Chicken and turkey) represented about 7 percent of the whole assemblage. Wildfowl and seabirds accounted for 11 percent, with the Black-legged Kittiwake being rather over-represented (4.5 percent). While the kittiwakes might have been eaten by the fishermen, it is also possible that they were transformed into bait. Fishermen often harvested seabird colonies to provide bait early in the year for cod fishing, before the arrival of capelin which normally came inshore at the beginning of July (Pope in press: 14). This working area could have served to process the seabird meat and prepare bait for the next morning. Cod is again the only fish identified to species (Table 4.2). The *Gadidae* family specimens are probably from cod, but were too incomplete to identify precisely. There is no indication that the Indeterminate Fish specimens were not from the cod family.

4.1.2 Anglo-Newfoundlander Period, c.1790-1815 (A-N)

This deposit, which is spread throughout most of Area C, has produced a significant amount of faunal remains. As discussed in Chapter 2, this context was disturbed by more recent 19th-century occupations, as indicated by the analysis of ceramic vessels (Amy St John, pers. comm.). This was most probably a processing area, as a lot of cod bones were found on the surface of the event.

This assemblage yielded a good variety of mammals (Table 4.1). Following the pattern seen in the other contexts, pig remains formed the majority of the mammalian assemblage. Sheep or goat came second, followed by a few elements of cattle. One calcaneus of caribou exhibiting a clear saw mark has been identified. The "Medium-Large Mammal" category can include bones from pig, sheep, goat and possibly small caribou. The "Large Mammal" category includes large caribou and cattle. Moose were excluded as a possible species from the "Large Mammal" category, as they were introduced to Newfoundland only in 1878, and the first moose shot on the island died in 1912 (Dodds 1983: 533). However, although unlikely, moose could have been acquired from people on the nearby Labrador coast. It must be noted that no moose fragments have been identified in the present collection. The element identified as "Medium Mammal" is a rib that could belong to a young sheep/goat. For the avian fauna, chicken were the most abundant, followed by the Black-legged Kittiwake and Hudsonian Godwit/Eskimo Curlew (Table 4.1). The Anglo-Newfoundlanders also exploited a variety of gulls and ducks, such as the Common Eider, the Harlequin duck, and other ducks of different sizes. They are all waterfowl and abundant in the vicinity of the site. The large fish assemblage is composed of at least 90 percent cod (Table 4.2). The high number of cod remains supports the idea that the Anglo-Newfoundlander fishers used the area to process codfish.

4.1.3 Later French Period (19th Century)

4.1.3.1 19th-Century Working and/or Processing Area (LF1)

The upper strata of the site represent the last use of the site by French fishermen in the later 19th century. A small sample of bones was found in these layers. It is important to remember that during the 19th century, the intense operations taking place on the site disturbed the layers below. Therefore, some bones found in these upper strata could come from earlier contexts. Unfortunately, this is, apart from the bread oven, the only 19th-century context. While it provides a general idea of 19th-century meat consumption, it is not necessarily representative of the whole period.

Event 800, which is the sod level, was excavated throughout Area C. Mammalian fauna represented 77 percent of the fauna, and avian 22 percent (Table 4.1). Of this assemblage, 1 percent could not be identified to a specific class (Indeterminate). This assemblage is consistent with the other ones, with pig bones (27 percent) being the most abundant, followed by sheep/goat (seven percent). Over 43 percent of the assemblage was identified either as Medium mammal, Medium-Large Mammal, Large Mammal or Indeterminate Mammal. Chicken accounted for 5 percent, while the wildfowl and seabirds represent 15 percent of the assemblage. Some of these wildfowl could be intrusive, like the right and left wings of a Great Black-backed gull that was found a few mm below the present surface, next to the large bedrock outcrop at the south end of Area C, which we called the Bookend. Over two thirds of the fish assemblage was identified as cod (Table 4.2). The

remaining third is from unidentifiable fish fragments, but there was no indication that they could not also belong to cod.

4.1.3.2 19th-Century Bread Oven (LF2)

The bread oven context produced a significant amount of faunal remains (N=490), of which 99 percent are of fish. This context is particularly interesting, because it is the only deposit that can be clearly related to cooking activities. The relative remoteness of the oven from the main processing area makes the cod remains more likely to be linked to cooking, while in other parts of the site the processing activities have permeated the soil with a large quantity of codfish bones. In the bread oven context, all the fish bones were identified, as their analysis was undertaken prior to the present research (Noël 2008). In this context, only four elements of Medium-Large mammals were identified, probably from pig, sheep or goat (Table 4.1). The only mammal formally identified is a Meadow Vole. The presence of this species in this context can indicate that the area around the bread oven had a dense vegetation cover, as the meadow voles prefer areas of good plant cover, because it protects them from predators (Elbroch and Murie 1963: 124-130). All of the fish identified in this assemblage are of Atlantic cod (Table 4.2). The indeterminate fish specimens are mostly non-diagnostic fragments of branchiostegal rays. Nothing indicates that they belong to a different species than Atlantic cod. Only two Blue Mussel shells were found, but molluscs were not thoroughly collected because of the proximity to the active beach, which contains many seashell fragments. Finally, four specimens were too fragmented to identify to taxonomic class.

4.1.4 Summary

The mammalian composition in all the contexts was fairly similar. Pig was by far, the most abundant mammal species, followed by sheep/goat, cattle and caribou (Figure 14). The only exception is in the burnt structure context, where the hare family ranks second, in front of the sheep/goat. Pork, salted or fresh, seems to have been the main source of meat for the French fishermen during the late 17th to late 18th century. In the Anglo-Newfoundlander context, pig seems to have been less popular, but this could be explained by the high amount of Medium-Large and Indeterminate Mammal specimens in that assemblage. In the 19th-century Later French context, pig and sheep/goat are the only mammals that were formally identified. During the earliest period (late 17th to early 18th century), it seems that sheep/goat were more often eaten than in the later periods. Cattle and caribou represent only a small percentage of the meat consumed at Dos de Cheval from the late 17th to late 19th century. The hare family bones found in the burnt structure context (Early- to Mid-18th century) are unique on the site, and may reflect more sophisticated meals associated with occupants of the burnt structure. The Medium-Large mammal category must be seen as mostly pig, sheep/goat and possibly small caribou fragments.

As for the avian fauna, the burnt structure context produced the greatest number of species, with a minimum of 23 different species, while the other contexts only produced three to twelve species of domestic and wildfowl. All of the species present are available locally, except for the extinct Eskimo Curlew. Some are

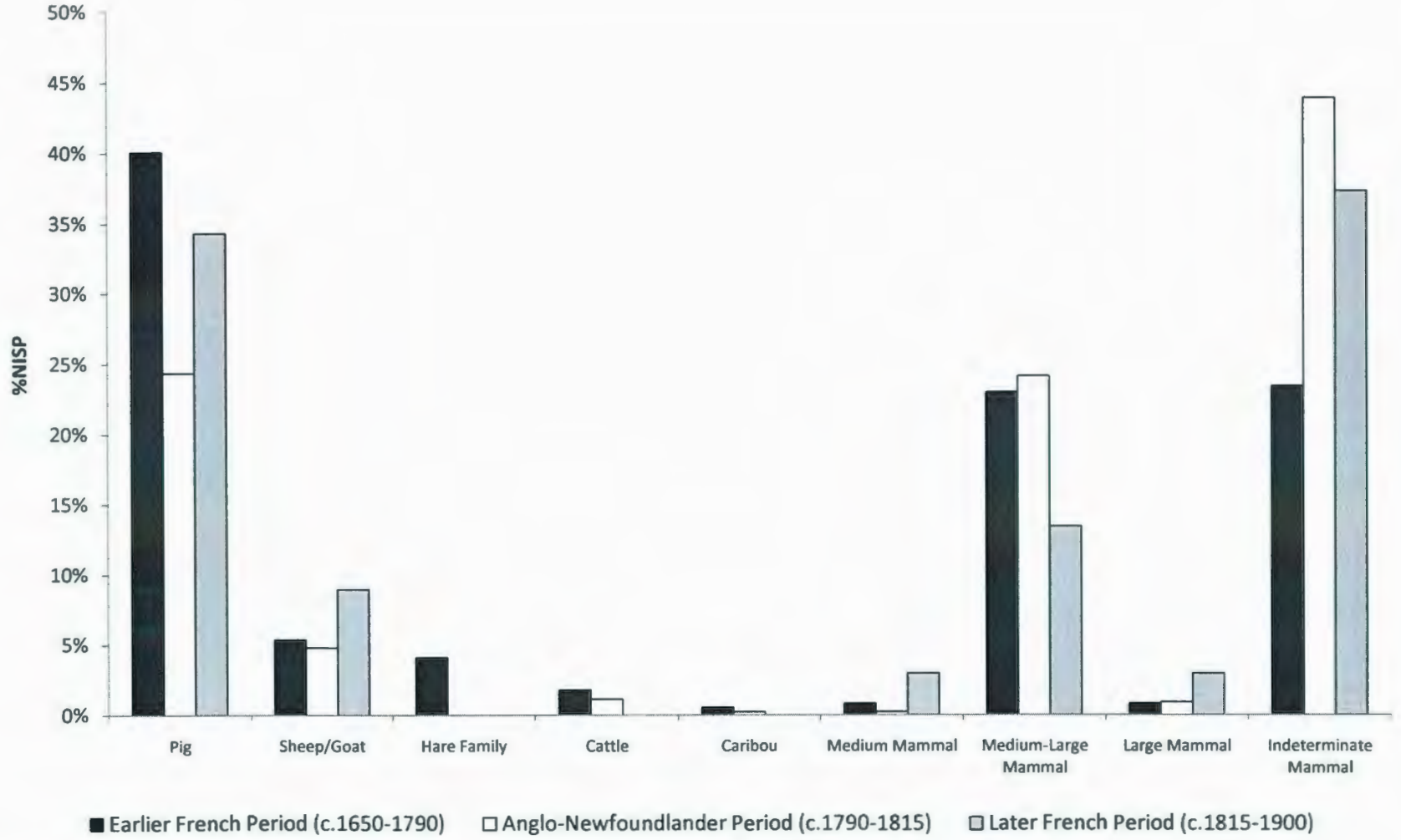

Figure 14. Percentage of NISP of mammal species and size groups, EfAx-09, Area C. Intrusive mammal species have been left out.

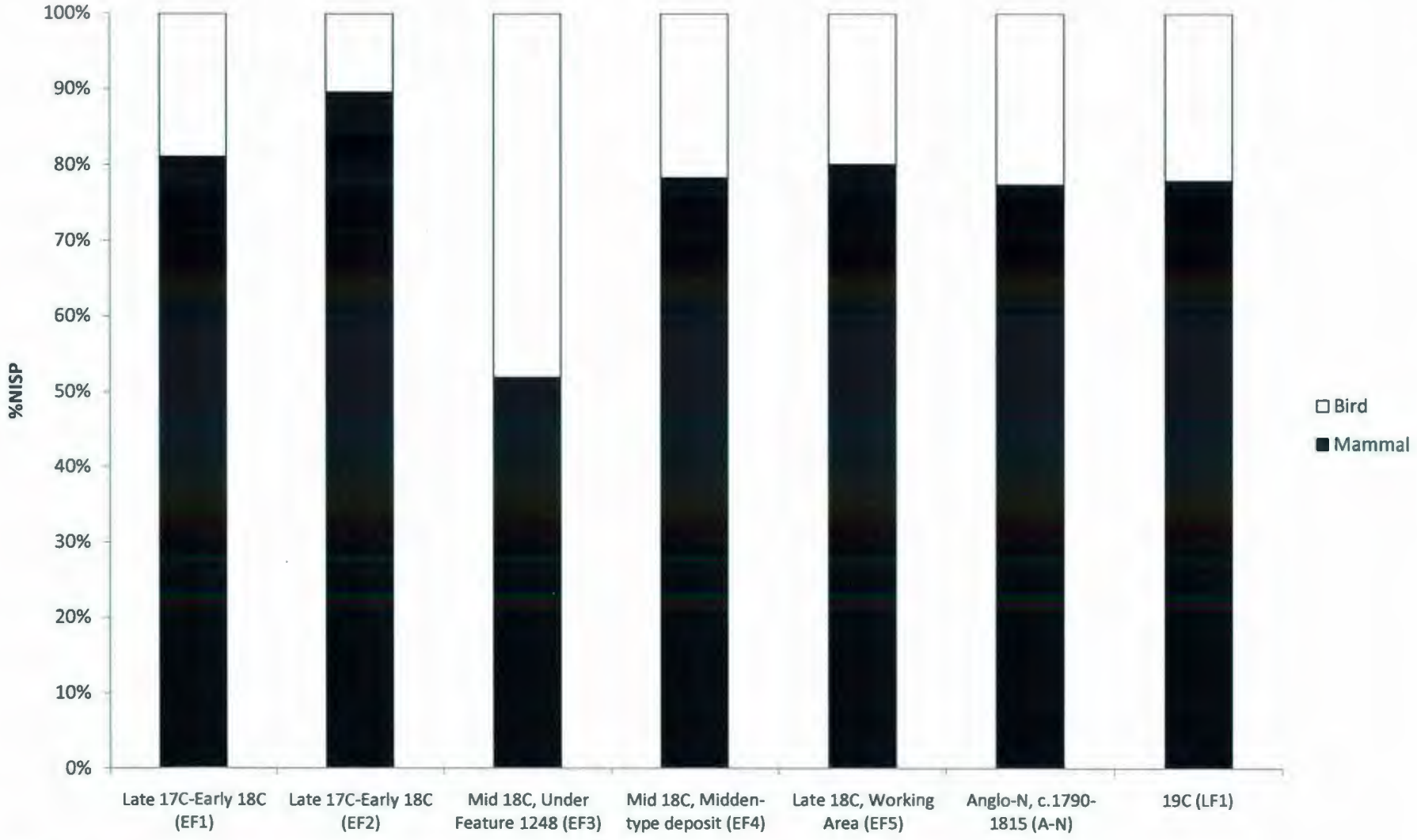

Figure 15. Mammal/Bird ratios, as percentage of NISP, EfAx-09, Area C, by context.

migrants (Hudsonian Godwit/Eskimo Curlew), and many others are breeding residents or residents on the east coast of the Great Northern Peninsula. As showed in Figure 15, all the contexts present a very similar ratio of mammal/bird of roughly 4:1, except one with a 9:1 ratio (the events 1067-1077-1083 context) and one with a 1:1 ratio (the burnt structure). There is no difference between the mammal/bird ratios of the French occupations and those of the Anglo-Newfoundlander occupation.

All of the fish identified to species belongs to the Atlantic cod. This is no surprise, as the men at this fishing station were harvesting, processing, salting, eating and discarding codfish. There is however a possibility that certain bones identified as cod might in reality belong to another species in the cod family (*Gadidae*), such as haddock, ling, tusk or saithe, all available on the coast of Newfoundland. Perhaps wrongly, most of the *Gadidae* fish fragments were assumed to be from cod, as Dos de Cheval was a cod fishing and processing site. The mollusc remains are mostly of mussels with a few gastropods. The importance of molluscs in the diet of the fishermen is difficult to assess at the site, as many seashells were overlooked and discarded during fieldwork. Besides, there are many mussel shells occurring naturally on the pebble beach, which was often used as fill by fishing crews. Hence mussel shells from the site may not in any way reflect human consumption for food.

4.2 Body Part Representation

This section presents the results of body part representation of pig and cod. The other mammals, except hare in one context, are represented by too few specimens to perceive patterns.

4.2.1 Earlier French Period (17th-18th centuries)

4.2.1.1 Late 17th- to Early 18th-Century Fish Processing Midden (EF1)

4.2.1.1.1 Pig Body Representation

This French context contains only a small assemblage of pig bones (MNE=14), and only comes from one excavation unit. Therefore, the resulting body part representation analysis is not statistically very significant. It shows a pattern where the head parts are over-represented, while there are almost no lower legs elements (Figure 16).

4.2.1.1.2 Cod Body Representation

This assemblage of cod has an over-representation of skull and vertebrae fragments. There is a low representation of appendicular and caudal vertebrae (Figure 17). This body representation fits the model of dry cod, where the skull and vertebral column were left on the butchery site, and the appendicular elements included in the dry product (Barrett 1997; Figure 18).

4.2.1.2 Late 17th- to Early 18th-Century Midden-Type Deposit (EF2)

4.2.1.2.1 Pig Body Representation

This context produced an even smaller amount of faunal remains than the preceding, with an MNE of only nine (Figure 16). Statistics from this context should be regarded with caution. This context does follow the trend of other contexts, where the head parts are over-represented. Some meaty parts are well represented (fore and hind quarters), while there are almost no lower legs. There are not enough cod remains in this assemblage to analyze body representation.

4.2.1.3 Mid 18th-Century Midden Under Burnt Structure (EF3)

4.2.1.3.1 Pig Body Representation

The pig body part representation in this context showed a clear over-representation of foot, fore foot and hind foot elements (Figure 16). These body parts include carpals, tarsals, metacarpals, metatarsals and phalanges. The head elements were well represented, while the hind and forequarters were underrepresented. The neck part was well represented, mainly due to the fact that two hyoid bones were found. No pig cervical vertebrae were recovered from this context. The apparent underrepresentation of axial elements is mainly due to the difficulty of identifying these elements to species. The ribs and certain vertebrae are especially hard to identify to species when fragmentary, and most of them were simply identified as Medium-Large mammal. Therefore, the under-representation of axial elements over

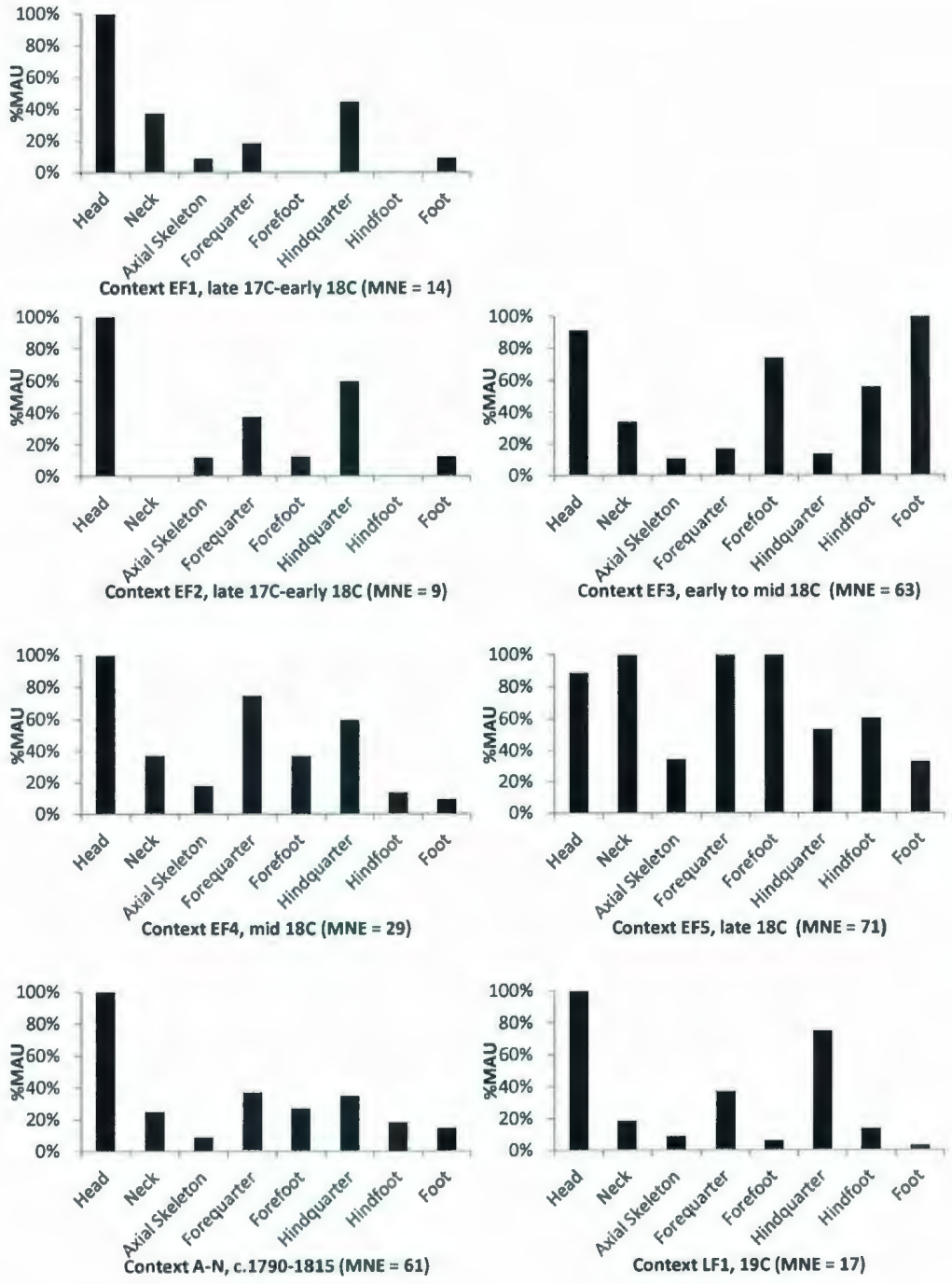

Figure 16. Pig Remains as Percent MAU, in All Contexts, from Late 17th- to 19th Century, by Body Part.

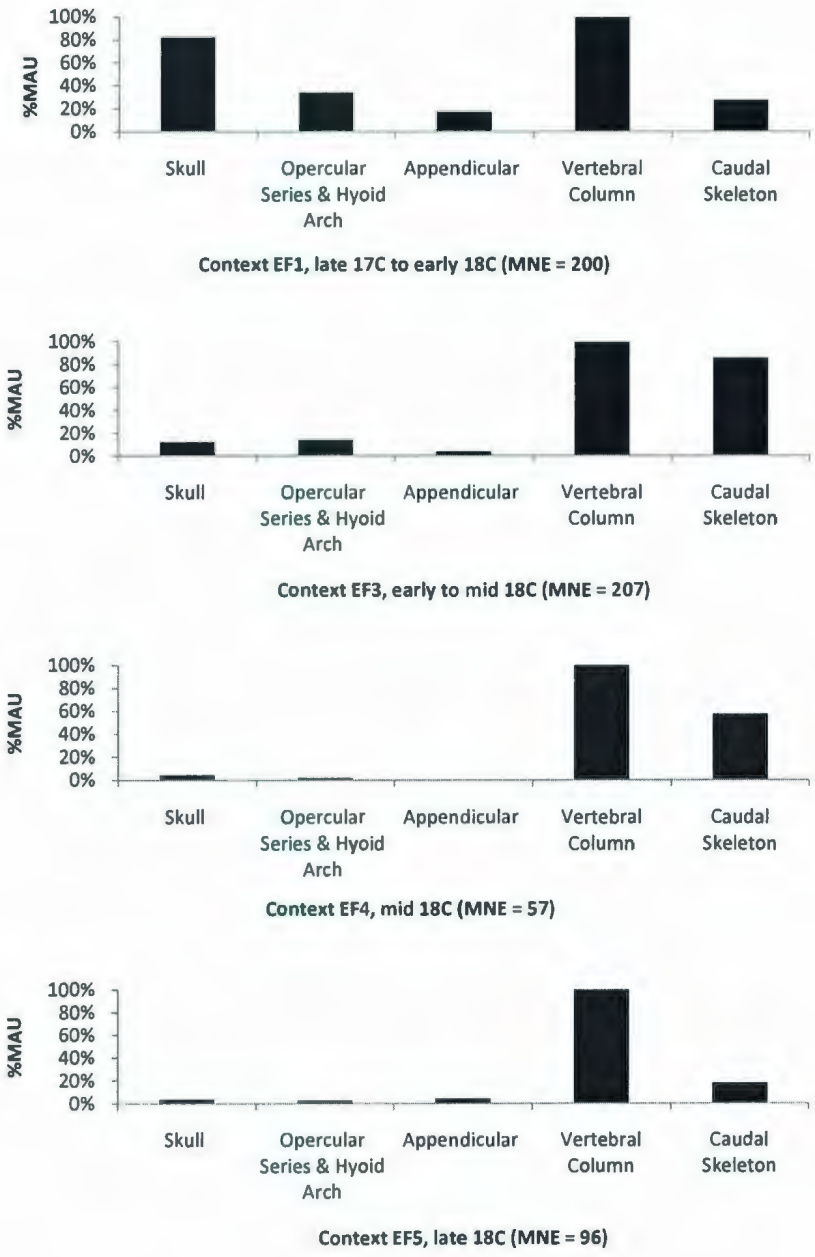

Figure 17. Cod Remains as Percent MAU, in Earlier French Contexts, Late 17th to Late 18th Century, by Body Part.

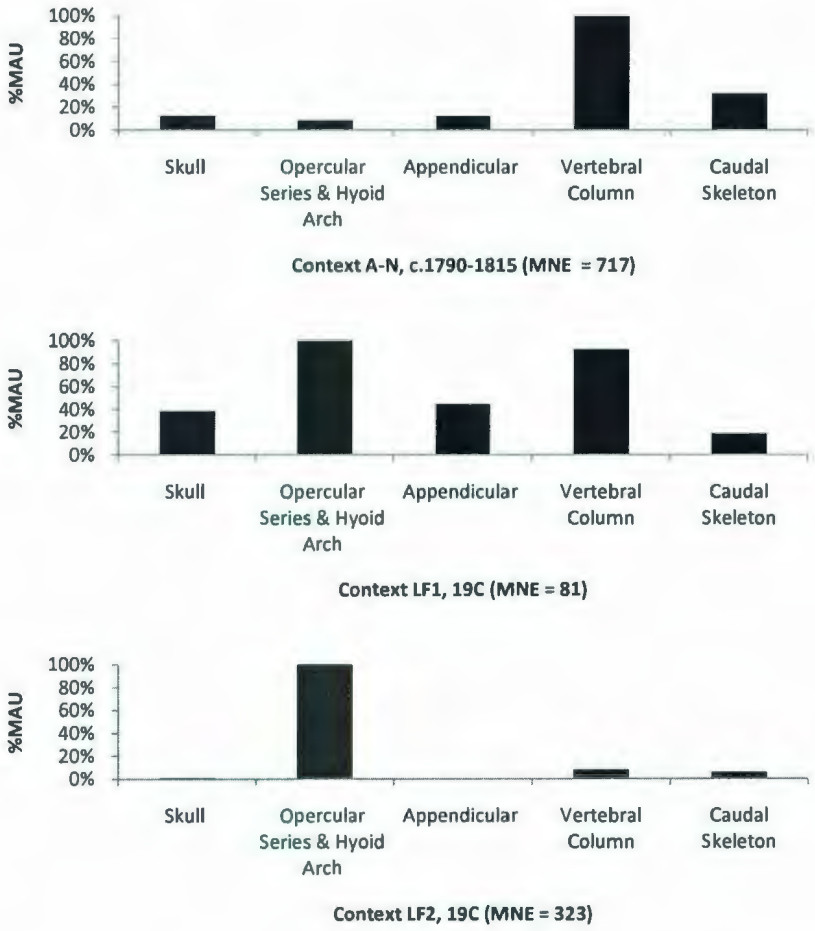

Figure 18. Cod Remains as Percent MAU, in Anglo-Newfoundlander and Later French Contexts, from c.1790 to 19th Century, by Body Part.

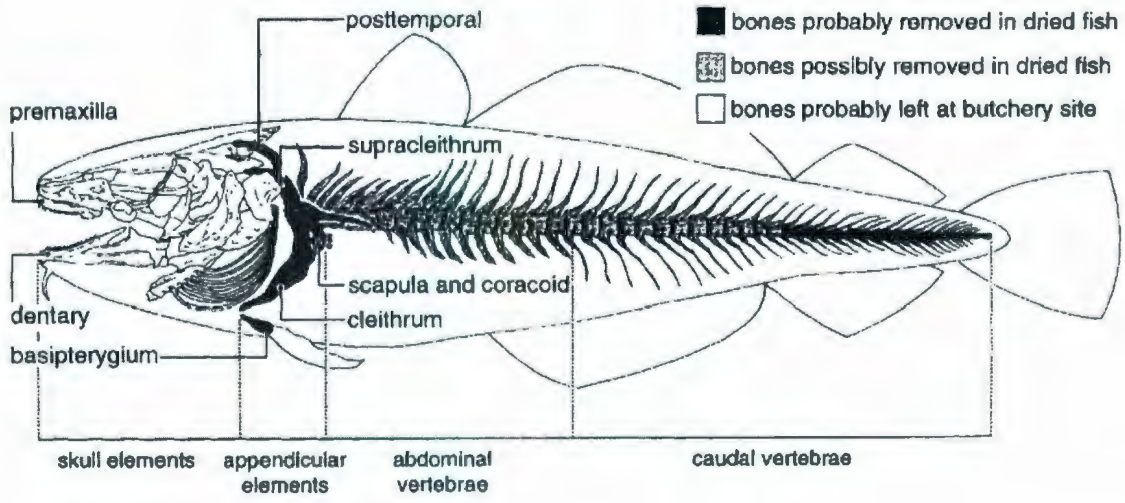

Figure 19. Butchery of cod-family fish for production of dried products traded in northwestern Europe during the Middle Ages – a generalized model (from Barrett 1997: 618, with permission).

others should be partly seen as potentially a result of identification problems rather than a consumption choice.

Both natural taphonomic processes and human action could explain the body part representation in this context. The carpals, tarsals, metapodials and phalanges of pigs are very dense and sturdy bones, which tend to preserve better than other elements, such as vertebrae or cranial bones. Therefore, this could explain the great amount of lower legs elements. However, the bones are in very good conditions and nothing indicates that strong natural taphonomic agents acted on the assemblage.

4.2.1.3.2 Hare Body Representation

At least three hares were present in this assemblage. Elements from all parts of the body were represented in this assemblage. This indicates that whole hares may have been cooked in the adjacent hearth, either boiled or roasted.

4.2.1.3.3 Cod Body Representation

Abdominal and caudal vertebrae were over-represented among the cod remains (Figure 17). Only a few skull and appendicular elements were present. This pattern does not fit the dry codfish model discussed above (Figure 19). This body part representation pattern could be the result of consumption of fresh cod, the head being discarded elsewhere on the site. It could have also been created by the effects of taphonomic factors on the fragile skull fragments. While it is possible that those elements did not survive, the assemblage from that area is in general very well preserved. Some caudal vertebrae still had their spines attached.

4.2.1.4 Mid 18th Century, Midden-Type Deposit (EF4)

4.2.1.4.1 Pig Body Representation

This context shows a clear over-representation of the meaty fore and hind quarters, as well as head parts (Figure 16). The low percentage of axial skeleton elements can, to a certain extent, be due to the difficulties in identifying ribs and vertebrae to species. The meaty limb bones might have been discarded in this deposit after being consumed in the adjacent cookroom or cabin structure.

4.2.1.4.2 Cod Body Representation

There is a clear over-representation of abdominal and caudal vertebrae in this assemblage (Figure 17). It is possible that taphonomic agents may have caused this pattern. Most cranial elements are thin and thus possibly more subject to physical attrition. However, it has been seen in other assemblages at the site that the sturdier skull elements – maxilla, premaxilla, dentary – have a very good preservation rate compared to other skull fragments. Abdominal and caudal vertebrae can often fall off when the cod is drying out on galets or flakes. The assemblage from this context could either be the result of cod processing and drying, or domestic refuse.

4.2.1.5 Late 18th-Century Working Area/Boat Repair Context (EF5)

4.2.1.5.1 Pig Body Representation

All body parts in this context are fairly well represented (Figure 16). There is a slight, but significant over-representation of meaty parts (neck, axial skeleton, forequarters and hindquarters), which account for half of the total MAU. The head

parts are fairly well represented, while there is a slight under-representation of lower leg elements. The even representation of body parts is evidence that the pigs were probably butchered on the site.

4.2.1.5.2 Cod Body Representation

There is a clear and unmistakable over-representation of abdominal vertebrae in this assemblage (Figure 17). This pattern could be the result of discarding vertebral columns while processing fish, or consumption of fresh fish. However, the under-representation of appendicular elements tends to favor the first interpretation. The under-representation of skull elements could to a certain extent be the result of poor preservation, or of discarding head parts in the ocean.

4.2.2 Anglo-Newfoundlander Period, c.1790-1815

4.2.2.1 Pig Body Representation

The strata associated with the Anglo-Newfoundlander occupation period of the site produced many pig bones. As seen in Figure 16, there was an over-representation of head parts, while the other body parts were fairly equally represented. There was however a slight over-representation of the fore and hind quarters. With all the elements represented, this assemblage showed evidence that pigs were brought and butchered on the site by the English fishermen. A very large boar canine was found in Event 1009, which is another indicator that fishermen were keeping live pigs on the site.

4.2.2.2 Cod Body Representation

Like the French assemblages, the cod from the Anglo-Newfoundlander period have an over-representation of abdominal vertebrae (Figure 18). The caudal skeleton is also well represented. This pattern could be the result of fish processing activities, where part of the vertebral column was discarded, but also the result of poor preservation of skull fragments.

4.2.3 Later French Period (19th Century)

4.2.3.1 19th-Century Working and/or Processing Area (LF1)

4.2.3.1.1 Pig Body Representation

The Area C French 19th-century context shows an over-representation of head parts, like the other contexts (Figure 16). There are also many bones from the meaty fore and hind quarters. The lack of lower legs and feet elements is prominent. This might be the result of natural taphonomic processes, such as animal scavenging of small and lighter elements such as phalanges and metapodials. However, it is possible, and more likely, that this aspect of the assemblage reflects the shipment of salt pork brought over from France.

4.2.3.1.2 Cod Body Representation

This assemblage contrasts with the others in terms of the fairly equal representation of all body parts (Figure 18). There was however an over-representation of heads (skull, opercular series and hyoid arch) and of abdominal vertebrae. The great representation of the opercular series and hyoid arch is due to

the great number of branchiostegal rays recovered. The significant amount of appendicular elements could indicate the greater consumption of fresh fish, or a change in the way cod was butchered. In previous periods, it seems that the head was cut anterior to the appendicular elements, thus leaving these elements in the salted and dried codfish product. Fishermen were possibly allowed to eat more fresh cod than in the previous periods.

4.2.3.2 19th-Century Bread Oven Working Area

As this context did not yield any identifiable mammal elements, the body representation was attempted only for the cod (Figure 18). This assemblage is very peculiar in comparison with the other contexts on the site. There was a clear over-representation of opercular series and hyoid arch elements. Most of these elements are directly attached to the tongue. It is possible that the fisherman in charge of baking also prepared other meals in the bread oven, such as cod tongues. While this pattern could be the result of differential preservation, there is no indication that ceratohyal and epihyal elements preserve better than other elements elsewhere on the site. Therefore, it is very likely that those elements were deliberately brought to the bread oven, rather than being the result of taphonomic factors.

4.3 Butchery Patterns

The butchery marks for the pig and sheep/goat elements have been recorded on individual elements drawings. The sheep/goat elements drawings are from

Popkin (2005), while the pig drawings were scanned from Pales and Lambert (1971) and modified and assembled by the author (Appendix 2). Five types of butchery marks were distinguished, based on their morphology (Landon 1996b: 59; Reitz and Scarry 1985; Crader 1990). In order to facilitate the explanation of cut marks, they are grouped into three different categories: primary, secondary and tertiary butchery (Rixon 1989: 49). These categories are non-exclusive, and are only implemented to direct the discussion rather than offer a conclusive interpretation for the butchery marks.

4.3.1 Earlier French Period (17th-18th Centuries)

4.3.1.1 Late 17th- to Early 18th-Century Fish Processing Midden (EF1)

4.3.1.1.1 Pig Butchery Patterns

Only seven elements exhibited cut marks. The vertebral column showed evidence of a longitudinal split through the middle of the vertebrae body, as well as transverse chop and saw marks (see Appendix 2; Figure 27 and 39). The cut mark on the rib was probably made during consumption. The cut marks on the humerus shaft were probably for deboning. The saw mark running across the femur shaft was probably to separate the cut of meat in two (Figure 29). According to Landon, this type of mark only occurred in late 18th- and early 19th-century contexts from sites in Massachusetts (1996b: 87). Finally, the shear and saw marks on the intermediate and distal phalanges are most likely related to the preparation of the leg for consumption (Figures 30 and 31).

4.3.1.1.2 Caprine Butchery Patterns

The thoracic vertebra had a diagonal shear mark in the longitudinal plane (Figure 50). An attempt to separate the lumbar vertebra into two symmetrical halves had been made, but the butcher seems to have missed the centre of the vertebral body. Whether this was intentional or not is unknown. The cut marks on the lumbar are probably linked to the removal of meat. The rib was sawn about two cm from the proximal end and in the middle of the shaft, to reduce it to a pot size portion.

The scrape marks concentrated on the distal end of the humerus could have been made during the removal of the meat, or as an attempt to cut the ligaments to disarticulate the humerus-radio-ulna joint (Figure 51). Finally, the radius shaft has been broken with a tool and exhibited some small scrape marks. It is not clear if the breakage of the radius in half was to apportion it, divide it from the carpals and the rest of the lower limb, or for other reasons (Landon 1996b: 79).

4.3.1.2 Late 17th- to Early 18th-Century Midden-Type Deposit (EF2)

4.3.1.2.1 Pig Butchery Patterns

This context does not offer much in terms of butchery patterns; only four elements exhibited cut marks. Ribs showed chop and cut marks probably linked with the division of the rib cage into consumable portions. The purpose of the cut marks on the lateral side of the scapula and on the shaft of the femur could be linked to preparation and consumption. The cut marks on the proximal phalanges are probably related to consumption and deboning of the feet (see Appendix 2; Figure 32).

4.3.1.2.2 Caprine Butchery Patterns

The atlas vertebra exhibited a diagonal shear mark longitudinally. For some reason, the atlas was chopped many times without apparent success in dividing it transversally. The possible saw mark noted on the drawing (Figure 52) could also possibly be the mark left by a toothed knife. The cervical vertebra was sheared transversally and the perpendicular cut marks might represent the removal of the meat from the neck. Finally, the thoracic vertebra was sheared longitudinally, with a diagonal orientation (Figure 53). It seems that the caprines were butchered into two halves by an inexperienced butcher, as the cut is not very well aligned with the centre of the centrum.

4.3.1.3 Mid 18th-Century Midden Under Burnt Structure (EF3)

4.3.1.3.1 Pig Butchery Patterns

The cut marks on the skull possibly relate to the preparation of the head for consumption. The cut marks on the hyoid could be related to the removal of the tongue, as observed by Landon for the removal of cattle tongues (1996b: 71). The ribs were chopped to prepare them for cooking, and the cut marks could have been made during deboning or consumption.

The scrape marks on the tibia are probably linked to consumption. The shear and saw marks on the calcaneum were most likely made during the separation of the tibia with the hind foot (Figure 33). The cut and scrape marks on the carpal and the metapodials are probably linked to the removal of meat on the lower legs for

consumption. The scrape marks on the proximal phalanges probably result from the deboning of the feet and consumption (Figure 32). Finally, the shear marks on the intermediate and distal phalanges were probably done during the preparation of the feet for consumption (Figures 34 and 35).

4.3.1.4 Mid 18th-Century Midden-Type Deposit (EF4)

4.3.1.4.1 Pig Butchery Patterns

4.3.1.4.1.1 Primary Butchery

The chop mark on the ventral side of the skull is hard to interpret (Figure 36). It could be linked to the initial dressing of the carcass, or to the consumption of the head. The saw mark in the middle of the mandible was probably done during the initial butchering of the carcass (Figure 38).

4.3.1.4.1.2 Secondary and Tertiary Butchery

The vertebral column seems to have been crudely butchered longitudinally, by saw or cleaver. The transverse butchering of thoracic vertebrae indicates that a piece of the rib rack was probably cut into a small pot-size or individual unit. The sacrum exhibits shear marks both longitudinally and transversally, which probably relate to butchery of sizeable meat portions such as the ham (Figure 39). The chop marks on the ribs relate to the division of the ribs rack into pieces that can be cooked.

The saw marks shown on the scapula are hard to interpret (Figure 37). They probably relate to the reduction of the blade bone portion into a smaller cut of meat more suitable for an individual serving. The saw and cut marks on the proximal end

of the ulna were probably done in disarticulating the humerus-ulna joint (Figure 40). The saw mark on the distal end of the radius can probably be linked with the separation of the forequarter from the carpals of the forefoot. The scrape marks on the fifth metacarpal can possibly be linked to the removal of the meat on the legs.

The saw and shear marks on the meaty innominate are evidence that it was cut down into small portions. Finally, the chop mark on the distal shaft of the tibia was probably to separate it into smaller pieces or to separate it from the hind foot.

4.3.1.4.2 Caprine Butchery Patterns

The anterior portion of the mandible presented a shear mark, probably made to free the meat of the jowl with the bone in place (Figure 54; Landon 1996b: 69). The cut marks could be the result of removing the tongue, or consuming part of the meat on the mandible. The clean break, probably made by a cleaver, was done to separate the femur into two parts, possibly to cook it (Figure 55). The scrape and cut marks were probably made when the piece was deboned.

4.3.1.5 Late 18th-Century Working Area (EF5)

4.3.1.5.1 Pig Butchery Patterns

4.3.1.5.1.1 Primary Butchery

The shear marks on the skull could be from beheading the animal during the initial dressing of the carcass. The shear, chop and cut marks on the carpals and astragalus probably relate to the removal of the feet. Although this separation may

have been done early in the butchering process, this could also be considered part of secondary butchery, as the feet were also consumed.

4.3.1.5.1.2 Secondary and Tertiary Butchery

The vertebral column clearly showed that the animal was cut in half longitudinally. The cervical vertebra had transverse saw and shear marks which were done to reduce the portion into a pot-sized piece (Figure 41).

The sheared distal end of the humerus could be related to the disarticulation of the humerus and radio-ulna joint, or the division of the humerus into a smaller piece (Figure 42). The innominate has only one shear mark, likely to reduce it to a smaller portion. The shear mark on the proximal end of the femur very likely relates to the disarticulation of the femur from the innominate (Figure 44; Landon 1996b: 86). The chop marks on the radius probably result from butchering it into smaller units (Figure 43). Finally, the scrape and cut marks on the metacarpals, calcaneum and proximal phalanges could have possibly been made when the meat of the lower legs was removed.

4.3.1.5.2 Caprine Butchery Patterns

The atlas has a longitudinal shear mark that was probably done to separate the carcass into two symmetrical halves (Figure 56). The transverse shear marks might have been to separate the neck from the head. The lumbar vertebra was split longitudinally, in a similar fashion to the pig vertebrae (Figure 57). The metacarpal seems to have been split longitudinally, in order to reach the marrow inside.

4.3.2 Anglo-Newfoundlander Period, c.1790-1815 (A-N)

4.3.2.1 Pig Butchery Patterns

4.3.2.1.1 Primary Butchery

The shear marks on the skull may have happened during initial dressing of the carcass, or later, to prepare the head to be consumed (see Appendix 2). The shear mark on the atlas may come from removing the head from the rest of the body.

4.3.2.1.2 Secondary and Tertiary Butchery

The mandible exhibited many different types of cut marks (Figure 45). In one case, the butcher first tried to saw the mandible perpendicular to its long axis. He then sawed it in half, in the middle of the incisors. Another saw mark, passing through the second molar, was probably done to prepare the jowl or cheek portion of the pig, which was often preserved in a similar fashion to the rest of the animal (Landon 1996b: 70; Simmons 1958: 6). The division of the mandible like this also exposed the marrow cavity. The cut and scrape marks on the lateral sides would have resulted from cutting the jowl meat off the mandible (Landon 1996: 70).

The vertebral columns have been separated longitudinally, as can be seen from the shear and saw marks from the cervical, thoracic and lumbar vertebrae. Some transversal shearing and saw marks on the thoracic and lumbar vertebrae were probably done to reduce the portions into pot-size pieces. The chop marks on the rib were possibly the result of preparing the rib rack for cooking.

The cut marks on the scapula could have resulted from removing the meat from the blade bone portion. The saw marks on the proximal end of the radius would have been made by the disarticulation of the elbow joint (Figure 46). The shear mark on the ulna was probably done to separate this portion into smaller pieces. The shear marks on the carpal probably come from hacking through the carpal-tibia joint to separate the fore foot from the rest of the leg. The shear mark on the fourth metacarpal was probably done to expose the marrow, and the element could have been added to soup. The shear mark on the proximal end of the third metacarpal could be linked to the separation of the lower feet from the leg. The chop and cut marks on the intermediate phalange were done to prepare the feet for consumption. The scrape marks were probably done during the removal of the meat on the feet.

The shear mark on the proximal end of the femur, although vertical, could be associated with the disarticulation of the femur from the innominate (Figure 47). It could also be the result of butchering the femur into smaller portions. The saw marks on the middle of the tibia shaft were done to separate the tibia into two distinct portions, also observed by Landon on 18th- and 19th-century assemblages from Massachusetts (1996b: 88). The cut marks on the patella could possibly be linked to the disarticulation of the femur-tibia joint. Finally, the shear mark on the calcaneum was probably done to separate the foot and hock from the rest of the leg. Landon found exactly the same mark on a pig calcaneum (1996b: 89).

4.3.2.2 Caprine Butchery Patterns

The cervical vertebra is shorn longitudinally, at a slight diagonal angle. The lumbar vertebra has both of its transverse processes cut. This technique was used from the medieval period, as observed by Audoin-Rouzeau on medieval and early-modern faunal assemblages from the monastery of La Charité-sur-Loire (1987:36). For this context, it could be the result of a butcher who was using more traditional methods of butchery, or simply a mistake in the butchering. This is the only example of this kind of butchery. The ribs were chopped, sheared and cut at different places, resulting from the apportionment of the rib rack into small pot-size pieces.

The calcaneum has multiple cut marks that appear mostly on the medial side (Figure 58). The marks closely match ethnographic examples associated with creating an opening between the tibia and the tendons coming off the calcaneum to insert a gambrel to hang the animal (Landon 1996b: 90; Binford 1981: 119, mark TC-3). Finally, the metatarsal was chopped, possibly to extract the marrow or to allow the marrow to dissolve in a soup or pottage (Figure 59; Landon 1996b: 91).

4.3.3 Later French Period (19^{h}Century)

Butchery pattern data from the 19th century were only provided by the Area C deposit, as the Area A bread oven did not yield any identifiable pig or sheep/goat remains.

4.3.3.1 19th-Century Working and/or Processing Area (LF1)

4.3.3.1.1 Pig Butchery Patterns

4.3.3.1.1.1 Primary Butchery

One fragment of cranium showed a straight edge, where it has been chopped through. This has probably been done during the dressing of the carcass. This could have also been made to prepare the head for consumption, by removing the teeth from the rest of the skull.

4.3.3.1.1.2 Secondary and Tertiary Butchery

The longitudinal shear mark on the thoracic vertebra and the saw mark on the lumbar vertebra were probably done during the initial separation of the carcass into two halves. The thoracic could also have been attached to a rack of ribs. The transverse saw mark on the lumbar vertebra is probably the result of dividing the vertebral column into sub-units, such as the *filet* (Turgeon and Froud 1961: 752).

The saw mark in the middle of the neck of the scapula was probably done to reduce the shoulder into a smaller piece (Figure 48; Landon 1996b: 75). This could be associated with the French cut called *palette*, the equivalent of the blade bone. The shear and cut marks on the distal end of the femur are probably the result of the disarticulation of the femur-tibia joint (Figure 49). The scrape marks on the anterior side of the patella have no clear function, although they could have been made to remove the meat on the femur-tibia joint. The chop mark on the fourth metacarpal could have been made in removing the lower front leg, or when exposing the

marrow, before putting the bone into the soup. The scrape mark on the rib was probably made during consumption.

4.3.3.1.2 Caprine Butchery Patterns

The only sheep element exhibiting cut marks is a scapula fragment. The multiple cut marks on the neck of the scapula were probably made during the removal of meat from the shoulder (Turgeon and Froud 1961: 642).

4.4 Age Profiles

The age profile was only attempted for the pig, as it was the most abundant species. To do so, the tooth eruption and wear stage for the mandibles and maxilla were recorded and compared to data from known age individuals. The epiphyseal closure stage (unfused, fusing or fused) was also recorded, where possible.

The tooth wear stages (TWS) followed the methodology proposed by Annie Grant (1982), where teeth are assigned one of the tooth wear stages (a to p) or one of the stages of eruption (C, V, E, ½, U). Normally, the tooth would then be given a score from 1 to 20 in order to calculate the mandible wear stage (MWS) by summing the scores from the three permanent molars. However, none of the mandibles possessed all three permanent molars, as they are all fragmentary. The determination of age groups was in part based on the works of Bull and Payne (1982). The tables presented here are summaries of the age groups; complete ageing data is available in Appendix 3.

Table 4.3. Pig age profiles for various assemblages, EfAx-09, Area C.*

Contexts	<6 mos.	6-12 mos.	~12 mos.	>12 mos.	12-16 mos.	16-20 mos.	19-23 mos.	~24 mos.	<24 mos.	>24 mos.	<30 mos.	<42 mos.	42+ mos.
Late 17C-Early 18C (EF1)	0	0	1	1	0	0	1	0	2	0	0	1	0
Late 17C-Early 18C Midden (EF2)	0	0	0	0	0	0	0	0	0	0	0	1	0
Mid 18C Under Feature 1248 (EF3)	0	0	1	17	0	0	1	1	17	0	0	1	0
Mid 18C Midden-Type Deposit (EF4)	0	1	1	0	0	1	1	2	8	0	1	5	0
Late 18C Working Area (EF5)	0	1	1	3	1	0	0	1	12	1	1	4	0
Anglo-Newfoundlander (A-N)	0	6	2	7	0	1	5	2	4	0	6	7	0
19C Processing/ Working Area (LF1)	0	0	0	2	1	0	0	0	1	0	1	2	0

*The numbers in each column indicate the number of elements which offered sufficient characteristics to be aged. They are maxillae, mandibles and long bone fragments.

4.4.1 Earlier French Period (17th-18th centuries)

4.4.1.1 Late 17th- to Early 18th-Century Fish Processing Midden (EF1)

One maxilla and five long bone fragments from this context have been aged (Table 4.3). The maxilla belongs to a pig in the 19-23 month group. About 70 percent of the pigs in the assemblage are between 12 and 24 months. All the individuals in the assemblage are younger than 42 months.

4.4.1.2 Late 17th- to Early 18th-Century Midden-Type Deposit (EF2)

This context proved to be very poor in term of bones that could be aged. Only one unfused proximal epiphysis of a tibia has been found, which belongs to an individual of less than 42 months (Table 4.3).

4.4.1.3 Mid 18th-Century Midden Under Burnt Structure (EF3)

The ages derived from the bones of this context are less precise than the other contexts, mainly because the great majority of the long bones are phalanges, which often only give ages of over 12 months or under 24 months (Table 4.3). One mandible and 37 long bone fragments were aged. The mandible belonged to an individual killed around 19-23 months. Half of the bones in the assemblage were older than 12 months. The other half were younger than 24 months. Two pigs were killed around 12 months of age. No fragments could clearly be aged below 12 months, mainly because of the lack of diagnostic epiphysis or mandibles. It seems that all the bones in the assemblage were younger than 42 months.

4.4.1.4 Mid 18th-Century Midden-Type Deposit (EF4)

This midden-type deposit contained fairly large fragments of bone. Two maxillas and one mandible and 17 long bone fragments could be aged. The mandible was aged from 6 to 12 months, while the two maxillas were 16 to 20 and 19 to 23 months old, respectively. Only 10 percent were younger than 12 months. About 70 percent (n=13) of the pig bone assemblage was between 12 and 30 months. All the pigs seem to be younger than 42 months (Table 4.3).

4.4.1.5 Late 18th-Century Working Area (EF5)

This context produced one mandible fragment and 24 long bone fragments epiphyses and/or diaphyses (Table 4.3). The mandible belonged to a pig that was killed between 12 and 16 months. About 80 percent (n=19) of the individuals were aged between 12 and 30 months. One fragment was younger than 12 months, while

one was older than 24 months. All of the individuals in this assemblage were younger than 42 months.

4.4.2 Anglo-Newfoundlander Period, c.1790-1815 (A-N)

This context is the one which produced the greatest amount of bones and teeth that could be aged (Table 4.3). Four mandibles and four maxillae could be aged, as well as 32 long bone fragments. Five of the mandibles/maxillae belong to the 19 to 23 months age groups, while one was aged around 16 to 20 months. Two mandibles, which could belong to the same individual, were aged around 7 to 12 months. Twenty percent (n=8) of this assemblage were of individuals of around 12 months or younger. Slightly less than 20 percent (n=7) were around 24 months old. All the individuals in this assemblage seem to be younger than 42 months.

4.4.3 Later French Period (19th Century)

4.4.3.1 19th-Century Working and/or Processing Area (LF1)

In this context, only one maxilla and five long bone fragments could be used to establish an age profile. The pig maxilla was aged between 12 and 16 months. Over 40 percent (n=3) of the assemblage was of individuals from more than 12 months. About 30 percent (n=2) of the pigs were younger than 30 months. All the pigs were younger than 42 months (Table 4.3).

4.5 Other Cultural and Natural Taphonomic Factors

Taphonomy can be defined as "the study of the transition, in all details, of organics from the biosphere into the lithosphere or geological record" (Lyman 1994b: 1; from Efremov 1940). The importance of taphonomy for zooarchaeologists has been widely recognized in the past 40 years. Applied to zooarchaeology, taphonomic factors include all the natural and cultural processes that influence a bone, from the life and death of the animal, to the excavation by archaeologist. The previous sections discussed different taphonomic factors that affected the faunal assemblage at Dos-de-Cheval. Body part representation studies help us understand how the animals were transported, or the spatial distribution of certain activity areas. Butchering greatly affects the composition of the faunal assemblages as it breaks up the bones into smaller units that can be cooked. In this section, three different cultural and natural taphonomic factors are considered: burning, gnawing and weathering. These are not presented using the phase divisions used above. In each sub-section, the relevant processes are described and relevant reference to specific contexts are made.

4.5.1 Burning

From experiments in which bones were heated in a kiln, Shipman *et al.* concluded that color, while being a poor indicator of precise temperature, can indicate the range of temperatures to which a bone has been heated (1984b: 314; Lyman 1994b: 385). Lightly heated bones (≤400°C) are mostly neutral and yellow colors. Bones heated between 300°C and 800°C tend to be yellow-red, and red to purple. Intensively heated bones (≥600°C) are mostly purplish-blue and blue (Lyman

1994b: 386). Bones that are "completely incinerated or calcined [can be] described as bluish-white or gray in color" (Shipman *et al.* 1984: 308). To simplify the description of the heat-modified bones found at Dos de Cheval, three categories are used: scorched (superficial burning), charred (blackened, towards charcoal) and calcined (blue-white, loss of all organic material and plastically deformed) (Johnson 1989: 441; Lyman 1994b: 385).

4.5.1.1 Scorched and charred

Only three mammal bones were scorched. They were found in Event 1037/1057 which is the layer right under the burnt structure. It is very likely that the exposed bones were burned when the wooden structure burned to the ground. A total of 15 charred bones were found. Eight of them were found throughout the Anglo-Newfoundlander context. There is no concentration of charred bones in this context. Therefore, they probably just represent the random discard of bone refuse. Four charred fish vertebrae and one charred sheep/goat vertebra were found in the Bookend operation. These corroborate the interpretation of this area as a campfire area.

4.5.1.2 Calcined

A total of 268 small calcined fragments of mammal, bird and fish bones were found throughout the site. There are however two large concentrations of calcined bones. The larger one was found inside the hearth structure (Feature 1233), adjacent to the burnt structure (Feature 1248). In total, 54 percent (n=145) were found inside that structure. All are mostly small unidentifiable mammal fragments, fish vertebrae

or bird long bone fragments. The second concentration is in the Bookend operation, where traces of camp fires were found. Almost 10 percent (n=20) of the total calcined mammal and fish bones were found in that area, concentrated in Event 1266. The bones were probably discarded into the campfires, where they would heat to a very high temperature (at least 700°C). Most of the rest of the calcined bones were found in the Anglo-Newfoundlander context.

4.5.2 Gnawing

Evidence of gnawing can help assess whether a deposit was exposed to animals for a long or short period of time. Two types of gnawing marks were recorded: carnivore and rodent. They both leave diagnostic marks on the cortex of the bone. Distinguishing carnivore marks from other marks and punctures left by trampling or other taphonomic factors is not always easy. Most of the time, carnivore gnawing is situated on the softer epiphyses. Sometimes, the carnivore apply pressure on the diaphysis to break it open. Small rodents, such as voles, mice and rats, tend to leave narrow, parallel grooves on the edges of a fractured bone.

4.5.2.1 Carnivore Gnawing

Sixteen bones in the collection had marks that could possibly be linked with carnivore gnawing. They were mostly punctures on the epiphyses or on the diaphyses of mammals. Four bird bones had punctures, but these could be related to holes made by lead shots, rather than carnivore gnawing. They were fairly well distributed throughout the events of the site, but at least four of them were very close to the present soil surface.

4.5.2.2 Rodent Gnawing

Nine bones were gnawed by rodents, possibly voles, mice or rats. Meadow voles seem to be fairly common on the site, as they were present in the long grasses during our coffee breaks, waiting for someone to drop a peanut. One even got trapped in our trench during the night. Rat bones were found in Area C in the 2006 assemblage (Swinarton 2007). Rats and mice were probably very common at the time, as they live commensally with humans and were particularly abundant on ships, in the past (Banfield 1974: 221). Those rodents were probably introduced early in the 16th century, when the first European fishers landed on Newfoundland. Four rodent-gnawed bones were found in the processing areas of the late 17th and early 18th century. One gnawed caribou fragment was found in the midden-type deposit of the mid 18th century (Events 1059 and 1063). The very low frequency of gnawed bones can indicate that the bones were probably not left in the open air for an extended period of time. It is possible that the bones were covered soon after their deposition, precisely to avoid attracting the scavengers that could also eat the fish that was spread out on the ground.

4.5.3 Weathering

The weathering of bone is defined as "the process by which the original microscopic organic and inorganic components of bone are separated from each other and destroyed by physical and chemical agents operating on the bone in situ, either on the surface or within the soil zone" (Behrensmeyer 1978: 153). For Miller, weathering refers to "the effects on bone of saturation, desiccation, and temperature

changes" (1975: 217). Some researchers have created weathering stages, from 0 to 6, each related to a range in years since death, when bone is left exposed to the elements (Behrensmeyer 1978; Andrews 1990; Johnson 1985). However, weathering is an inconsistent process, which is greatly affected by the microenvironment in which the bone lies. It is therefore hard to interpret the number of years that a bone has been exposed based on the weathering stages.

For the Dos de Cheval assemblage, no weathering stages were systematically applied. Only subjective observations of the general preservation of the assemblage were noted during the analysis. In general, the faunal assemblages at Dos de Cheval were not heavily weathered. The upper strata, corresponding to the last use of the site in the late 19th century, exhibited a high amount of very flakey fish bones and heavily weathered mammal bones. This is probably due to the long exposure of bones on the surface when the site was abandoned.

The midden-type deposit found under the burnt cabin was extremely well preserved. Some cod caudal vertebrae still had their complete ventral and dorsal spines attached. It is possible that the burnt layer on top of it has protected the bones from further deterioration. As attested by the remains of charred rope, grass and cloth, this burnt layer was probably covered soon after the fire event.

CHAPTER 5: INTERPRETATION

The zooarchaeological data extracted from the faunal assemblage of Dos de Cheval yield only one piece of the puzzle. Historical and archival documents offer another piece. We must relate zooarchaeological and historical data to better understand how fishers' diet evolved through time and the role diet played in their cultural and social identity. In this chapter, the two main research questions raised in Chapter 1 are considered. The interpretation are based both on the faunal data and the available historical and archival documents.

The first question relates to the fishermen's exploitation of the local environment. The Great Northern Peninsula is first described, as well as the local mammal, bird and fish species, with information regarding their seasonality. Then, travel accounts and other historical documents from the 17th to 19th century with reference to the wildlife of the Petit Nord are presented. The wild animals recovered from the Dos de Cheval site are then discussed using the three chronological phases established: Earlier French (17th-18th century), Anglo-Newfoundlander (1790-1815) and Later French (19th century). Finally, the historical and faunal data are used to re-examine the relationship between the fishermen and their environment, and to propose an explanation of why they chose to exploit certain animals over others.

The second question relates to husbandry and butchery practices. As pigs are the most numerous mammalian remains found on the site, a reconstruction of age profiles is conducted. Through comparison of the assemblage with published faunal

material from contents of ship wreck victualling casks, the butchery and body part representation of the Dos-de-Cheval pigs is used to assess the consumption of barrelled pork on the site. Then, a comparison between French and Anglo-Newfoundlander butchery practices is conducted, in order to distinguish cultural patterns. Finally, it is argued here that butchery patterns can show evidence of individual versus communal cuts of meat. This is tied to specific contexts along with particular chronological periods.

5.1 Exploitation of Local Fauna

To understand how fishermen exploited their surrounding landscape for alternative food resources, both historical and zooarchaeological data must be considered. Travel accounts, especially, provide insight into the range of species exploited and where they could be hunted in particular seasons. Zooarchaeological data provide first-hand evidence of the species that were consumed or used at Dos de Cheval. This section first presents evidence of wild fauna exploitation by the fishermen, through travel accounts and other historical documentation. Then, with the help of the zooarchaeological data, I explore the range of wild species consumed at Dos de Cheval and how these compare with the historical documents. These data provide material to help discuss how the fishermen exploited the environment around the fishing station.

5.1.1 Historical Account of Wild Fauna Exploitation

The majority of information on hunting and trapping of wild animals is found in descriptions of the fisheries, and travel accounts and journals.

5.1.1.1 Small and Large Game

Nicolas Denys' *Histoire naturelle des peuples, des animaux, des arbres & plantes de l'Amerique septentrionale, & de ses divers climats* is a very insightful description of the shore-based fishery (1672). Although his description is centered on the Acadian area fisheries, it is still very relevant for the Petit Nord fishery. In addition to describing the practice of the dry, salt cod fishery, he also explains the kind of provisions French crews brought with them, and he lists the animals they could exploit while on the sea and on land. He gives the following details:

> le Capitaine fait faire un jardin à terre qui luy donne des ſalades, des pois, des févres, outre le gibier qu'il peut tirer avec le Chirurgien quand ils en ont le loiſir, comme tourtes, canards, outardes, ſarcelles, lapins, et autre gibier qui ſe trouve au bord de la mer ou dans les eſtangs (Denys 1672 : 175-76).

In this extract, he explains that the captain made a garden, which gave him fresh salads, peas and beans. Along with the surgeon, when they had the leisure time, they could hunt passenger pigeons (*tourtes*), ducks, geese, teals, rabbits, and other fowls that are found on the sea shore or in ponds. From his description, it seems that

the wild fowl and possibly the garden were reserved only for the captain's and surgeon's consumption.

In 1851, the pharmacist and publisher Charles Le Maout published the *Notice sur la navigation et la pêche de la morue a la côte de l'île de Terre-Neuve*, written by an experienced French captain named Pierre Romain Désury. He provides useful details about everything surrounding the cod fishery, from the daily rations to the dangers of navigation and the layout of the fishing station. About the hunting of small game, he writes:

> Souvent les capitaines n'ont pu se voir avant la première quinzaine d'août. Mais alors on se fête, on se traite. Chacun tue un mouton. On envoie à la chasse, pour avoir quelques perdrix, quelques courlieux, un lièvre; mais encore on profite d'un mauvais temps ou on met cela le soir, pour que l'ouvrage n'en souffre pas (Désury 1851, in Querré 1998 : 244).

He explains that in August, the captains (of the harbour?) have a feast. Each of them kills a sheep. They send people to go hunt a few ptarmigans, curlews and a hare. He specifies that they generally do this when weather prevents them from working, or in the evening, so it would not interfere with the fishing activities. Désury writes that in August, they give time to the crew members to shave, clean and repair their clothes, and other business that they were not able to do during the summer because of the intense cod fishing (Désury 1851, in Querré 1998: 243). Like Denys (1672), Désury does not seem to include the other crew members in his feast

of wild game, but only the captains. Obviously, one sheep, a few ptarmigans and curlews, and one hare would barely feed more than two dozen hungry men. During the 19th century, a crew for a single fishing station could comprise over 100 men.

Published in 1852 and entitled *Voyage a Terre-Neuve*, Carpon's travel account describes in detail the cod fishery and the hunting of wild fauna. He was a surgeon for the *Marine de Commerce* and travelled many times to Newfoundland. Many parts of his description are based on his experiences in Cap Rouge harbour. Carpon explains that the islands of Belle-Ile (Bell Island) and Groix (Groais Island) are the most productive for small and large game. The two islands are only about 33 km (18 *milles marins*) east of Cap Rouge harbour, in which Dos de Cheval is situated. On Groais Island, he found many caribou, foxes, otters, often polar bears, and sometimes beavers. Ptarmigans and waterfowl were fairly common. On Bell Island, caribou and other quadrupeds were less common, but fowls were very abundant. In an anecdote about a hunting trip to Bell Island, Carpon said that they shot a lot of ptarmigans, as well as many geese. During the curlew season in autumn, the south-east end of that island was the best place to hide and shoot at the flocks, which could be hunted all day (Carpon 1852: 165). As the winter came, when the first snow fell, hare and ptarmigan left the woods for the harbours, where they were easily hunted. Carpon also describes how to hunt black bear, with a rifle and trap, and the caribou, with a rifle. Although seal are and were present in the region, none of the documents consulted directly refers to the hunting of this mammal by French cod fishermen.

Carpon (1852: 47-49) describes in detail the seal hunting practiced by the Newfoundlander sealers, but only as an observer.

5.1.1.2 Fishes

While on the shore of the Petit Nord, the *raison d'être* of the fishermen was the harvest and processing of cod. Evidently, fish played an important role in the diet of fishers, especially the lowest status crew members (de la Morandière 1962: 78). While at sea, fishermen could catch and eat cod, as well as mackerel and herring (Denys 1672: 175). On shore they used cod heads in their soup, with a bit of lard and some herbs. Sometimes they would put fresh fish in it, but certain captains were opposed to that practice as it meant that they would be eating their profit (de la Morandière 1962: 78-79). Fishing crews also fished a lot of capelin for bait, when it came inshore, normally around the beginning of July (Pope, in press: 13). At least one document attests to salmon fishing on the Petit Nord:

> La pêche du saumon peut se faire avec succès dans plusieurs baies de l'île de terre-neuve possédée momentanément par les français, à savoir, dans la baie aux lièvres (Hare Bay), dans celle des cheminées (Chimney Bay), et dans la baie blanche (White Bay), qui est la plus au sud (Anon n.d.: fol. 29).

Salmon fishing was more of a side-line than an actual full scale commercial enterprise. In the manuscript quoted, the author is trying to convince someone (an investor?) of the profitability of the establishment of a salmon fishery in

Newfoundland's Petit Nord. The author writes that in the "grande saumonnerie" of Hare Bay, they got as much as 10 barrels (*barriques*) in a year, or 1200 salmon, by putting nets across the river (Anon n.d.: fol. 29).

5.1.1.3 Seabirds

Seabirds have been exploited by fishermen in Newfoundland since the early 16th century. As argued by Pope (in press: 8), migratory fishers preferred fishing stations that were near seabird colonies. This is not pure coincidence, as the plankton-rich waters that supported schools of capelin and, in turn, cod, also supported other ocean species, which attracted seabirds (Pope in press: 8; Montevecchi and Tuck 1987: 17; Montevecchi and Myers 1995). The seabirds were often used as bait for cod before the arrival of the capelin in July (Pope in press: 13; Omohundro 1994: 213). In a travel journal, Jean-Dominique Cassini (1778: 153) writes that "from their boats, they [the fishermen] shoot goelands [gulls] and other sea-birds, with which they make their soup". Therefore, while seabirds may have been used as bait, they could also be a welcome supplement to a diet of fish heads and biscuits.

When fishermen first saw the Great Auk, a flightless fat bird, they marvelled. Easily killed because of their lack of mobility, Great Auks were collected for their meat, oil, feathers, bait and eggs (Montevecchi and Tuck 1987: 51; Tuck 1961; Mowat 1984). Jacques Cartier describes a stop at *L'Isle des Ouaiseaulx* (Funk Island) for provisions:

> Some of these birds are as large as geese, being black and white with a beak like a crow's. They are always in the water, not being able to fly in the air, inasmuch as they have only small wings about the size of one's hand, with which however they move as quickly along the water as other birds fly through the air. And these birds are so fat that it is marvellous (Cartier n.d.: 4-5).

The establishment of permanent fishing communities in the 17th century increased the pressure on seabird colonies (Montevecchi and Tuck 1982: 51). Numerous participant-observers from the 16th to the 20th century describe how Newfoundland planters exploited seabird populations. Captain George Cartwright, in a book published in 1792, asserted that:

> It has become customary of late years for several crews of men to live all summer on that island [Funk], for the sole purpose of killing birds for the sake of feathers [...]. If a stop is not soon put to that practice, the whole breed will be diminished to almost nothing, particularly the penguins: for this is now the only island they have left to breed upon (Cartwright 1792).

Seabirds were not only utilized for their food and feather; they also served as navigational landmarks. Indeed, the sight of black guillemots, called *godes* by the fishermen, announces that they are approaching the ice-floe (Carpon 1852: 42). In his book, Carpon (1852) describes the birds that are especially prized when fishermen

navigate through the floating ice in the spring. He refers to an *alouette palmipède à pied rouge*, which he finds very tasty. It is uncertain to what species this refers to, but the description he gives fit the physical characteristics of the Mourning Dove. He writes that other seabirds, although not as prized as the latter, were also hunted, such as gulls (*mauves* and *goélands*), murres (*guillemots*), gannets (*dadins*) puffins (*calculots*) and all kind of ducks (*canards*), such as scoters (*canards noirs)*[2]. According to Carpon, they are all very oily, and it is hard for the cook to prepare them in a refined way. Nevertheless, fishermen still ate them, preferably with lard (Carpon 1852: 46-47).

While a large range of wild animal species were available in the Petit Nord, it seems that only a few privileged individuals could hunt and eat them. Denys (1672), Désury (1851) and Carpon (1852) refer to hunting as a practice reserved for the captain, the officers, the surgeon and other higher status crew members. Only seabirds seem to have been available to the fishermen as a whole, probably because of the ease with which they could be captured and their lesser social valuation as food. Therefore, it seems reasonable to conclude that archaeological contexts associated with higher status individuals should contain a higher representation and a broader variety of wild fauna, especially small and large game. This consumption pattern established through documentary evidence can now be compared with the faunal specimens recovered from Dos de Cheval.

[2] His description of the duck as having a red membrane corresponds more to the scoters than the black ducks.

5.1.2 Wild Fauna at Dos de Cheval (EfAx-09)

The faunal remains recovered from Dos de Cheval offer the opportunity to assess the consumption of wild animals at the site. As outlined in previous chapters, contexts from three different periods were established: Earlier French (17th-18th century), Anglo-Newfoundlander (c.1790-1815) and Later French (19th century). These permit a diachronic comparison of the use of wild fauna in these periods.

5.1.2.1 Earlier French Period (17th-18th Century)

This period is composed of five different contexts, from the late 17th century to the late 18th century. In order to facilitate comparison, the two late 17th-century contexts were grouped. Through the whole Early French period, the ratio of domesticates/wild fauna was stable, ranging from a ratio of 8:1 to 5:1, except for the burnt structure context which has a ratio of approximately 1:1 (Figure 20). This context is unique on the site and has a great interpretative potential.

5.1.2.1.1 Mid 18th-Century Midden Under Burnt Structure

The midden-type deposit, dated from the first half of the 18th century, produced at least 20 different species of wild birds and is the only context throughout the entire site that contains hare remains. It also produced a significant amount of mussel shells. The cod body representation indicates that whole fish were probably consumed, instead of only fish heads. Intrusive remains, such as an American Black Bear molar and a Meadow Vole femur have also been found. When compared with the other Early French contexts, this deposit offers the lowest representation of

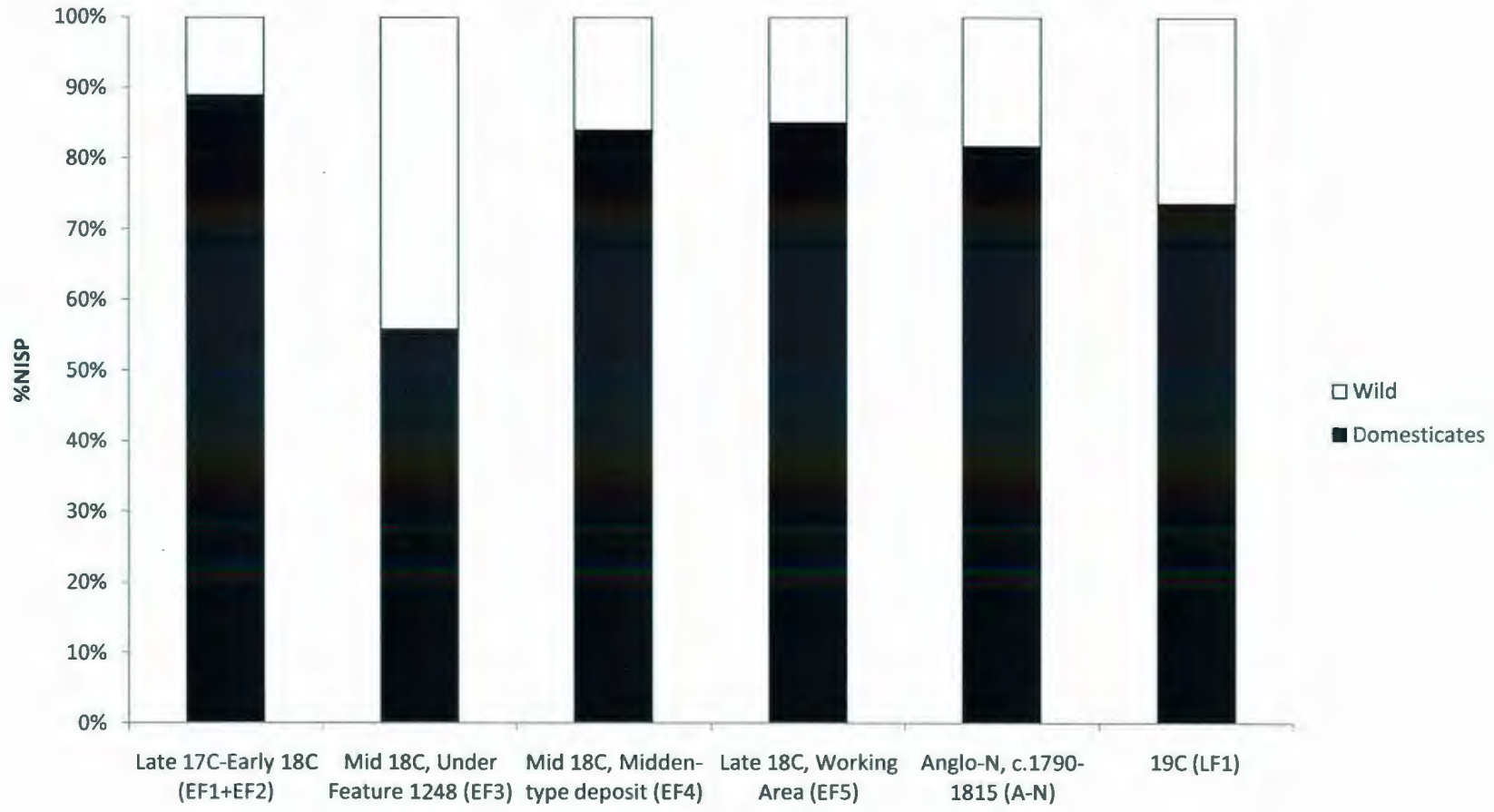

Figure 20. Ratio of wild/domesticate bird and mammal fauna using Percent of NISP, EfAx-09, Area C, by contexts.

seabirds (Figure 21). It contains a higher representation of wild land mammals than any other context, and a significant amount of shore birds and birds that live near lakes, meadows or forest. This can possibly be explained by a search for tastier wildfowl, such as ptarmigans, curlews or godwits, loons and ducks. As outlined by Carpon (1852: 46-47), seabirds were more difficult to cook properly and less tasty than other wildfowl. A description of an August feast with the captains of the harbour almost exactly fits the wild fauna assemblage found in this context: a few ptarmigans, a few curlews and a hare (Désury 1851; in Querré 1998: 244).

Artefacts found in association with this deposit, such as glass stemware and tumbler sherds and a gold gilded button, support the hypothesis that at least one of the wooden structures was used by higher status individuals. The faunal remains from this structure follow the diet of higher status individuals established through historical documentation. However, the presence of a large hearth suggests that this structure was probably used as a cookroom. A description of the cabin of the *état-major*, where food is cooked and the officers eat, seems to fit the excavated feature in many regards:

> The large cabin, or the *état-major*'s, is composed of a vast kitchen, with a chimney built in clay and black fireproof granitic stones. Close to the hearth is a large oven made of bricks artistically arranged; it is made to receive many casseroles. An interior division separates the kitchen from the dining room,

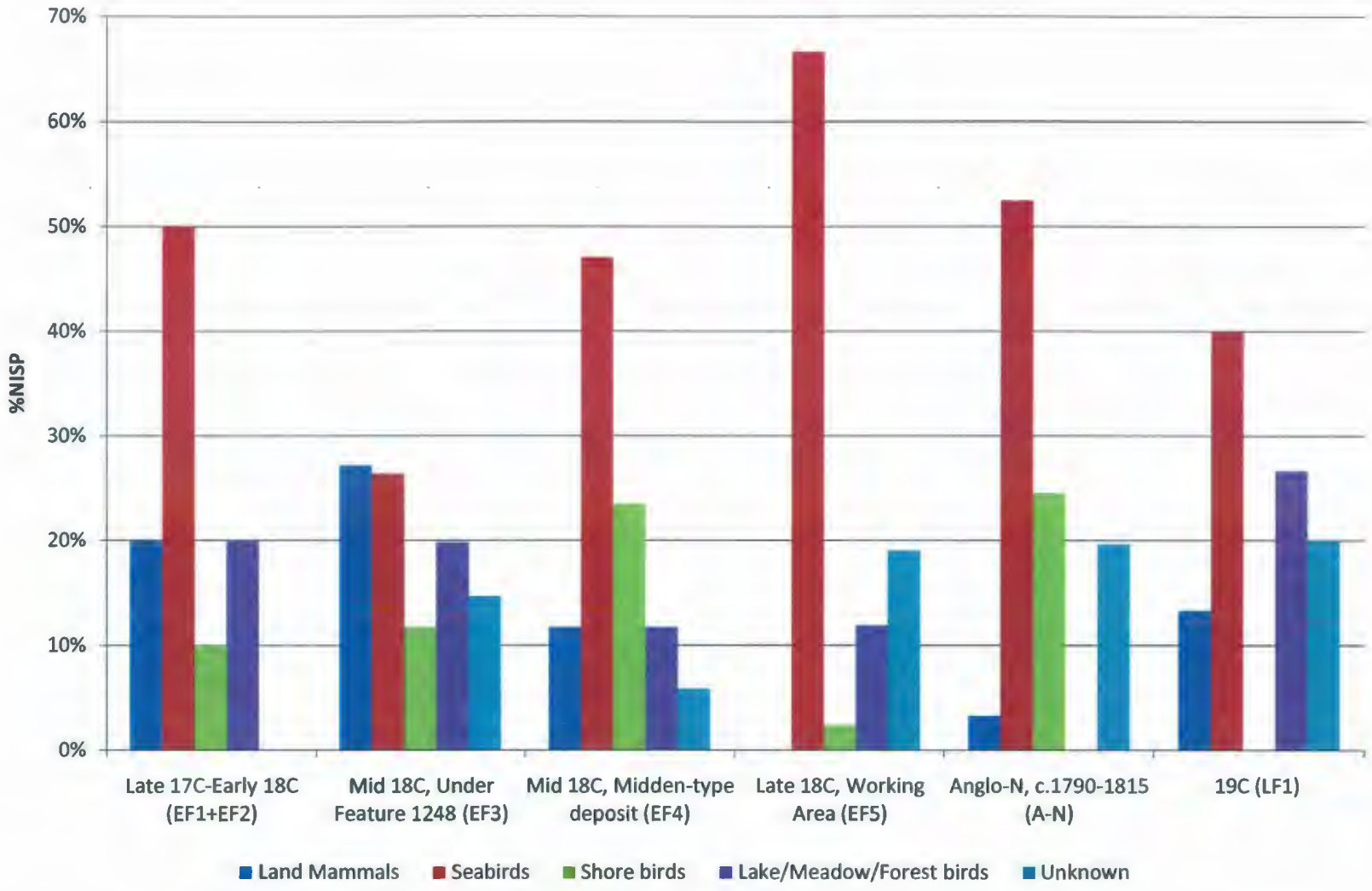

Figure 21. Percent NISP of wild mammal and bird fauna grouped into ecological habitat, EfAx-09, Area C, by context.

where four benches are placed around a table, and where the officers eat their meals (Carpon 1852: 62-63)[3].

In addition, Carpon says that the kitchen inside the *état-major* cabin communicates with a storeroom and the captain's bedroom. The cook, or *maître d'hôtel,* slept next to the barrels, so he could have tight control over the alcohol provisions (Carpon 1852: 63). The captain Désury offers a very similar description of the main cabin, which is composed of a kitchen, a storeroom, a living room and a room for the captain (Désury 1851; in Querré 232-233). Although these descriptions are about one hundred years later than the feature excavated, it is quite likely that such structures also existed during the first half of the 18th century.

Denys explains that the captain ate in his cabin, along with the master, the pilot and the surgeon (1672: 171). He also had one boy (*mousse*) to serve him and boys at each plate, who would eat the leftovers at the end of each meal. Denys and later authors make it clear that officers and fishermen lived apart, and that they did not eat

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[3] La grande cabane, ou celle de l'état-major, se compose d'une vaste cuisine, avec cheminée construite en argile et en pierres noires granitiques, inattaquables au feu : près du foyer, s'élève un grand fourneau en briques artistement rangées; il est destiné à recevoir mainte casserole [...]. Une cloison sépare cette cuisine de la salle à manger, [...] où sont déposées quatre bancelles autour d'une table de même forme, que MM. les officiers prennent leurs repas.

together. This hierarchy and separation in space of consumption could explain the rich assemblage recovered from Feature 1248, burnt structure.

5.1.2.1.2 Other Early French Contexts

Compared to the midden under Feature 1248, burnt structure, the other Earlier French contexts are relatively poor in wild fowl and game. Wild fauna account only for 11 to 15 percent of the assemblages. In both of the Late 17th- and Early 18th-century contexts, caribou were present. In all of the Earlier French period deposits, geese and seabirds are well represented (Figure 21). The Late 18th-century assemblage contains no wild land mammal. This context exhibits the highest representation of seabirds from the whole site. Seabirds are readily available resources, close to the site. The processing of cod probably attracted many seabirds, which could feed on fish offal and detritus. Differences in taxonomic abundance in the different assemblages could be linked to the various functions these midden-type deposits performed. Some deposits were probably more linked to fish processing or working areas, while some others were domestic midden deposits.

5.1.2.2 Anglo-Newfoundlander Period (c. 1790-1815)

The events from this period produced one caribou specimen, and bones from at least 11 species of wild birds. In term of the ratio of domesticates/wild fauna, this context does not differ significantly from the French contexts, having a ratio of roughly 4.5:1 (Figure 20). The species exploited in this context are all also found in French contexts, except for Harlequin Duck which are unique to the Anglo-Newfoundlander context. In the latter context, there is a high representation of

seabirds and shore birds. The distribution of wild fauna types is fairly similar to that of the Early to Mid-18th-century French period (Figure 21).

The continuity in the ratio of wild animals and in the species exploited between the French and Anglo-Newfoundlander contexts has two possible explanations. First, while they were from different cultural backgrounds, the migratory Newfoundlander fishermen did the same work and lived in the same environment as the migratory French fishermen. The species readily available to the French were also accessible to the Anglo-Newfoundlanders. These economic and environmental constants blur any ethnic differences in the exploitation of wild animals. A second explanation relates to the archaeological deposit itself. The events from the Anglo-Newfoundlander period are spread throughout many units in Area C. It is not a clear midden-type deposit and it was heavily disturbed by subsequent 19th-century French occupations. Hence, soil disturbance have also blurred any cultural differences in the species exploited. For this reason, further comparisons between French and Anglo-Newfoundlanders food consumption will not be attempted.

5.1.2.3 Later French Period (19th Century)

In Area C, for this period, the ratio of domesticates/wild fauna is somewhat lower than the other contexts, with a ratio of about 3:1 (Figure 20). However, this assemblage is the smallest with only 87 mammal and bird fragments. It is therefore not as statistically robust as the larger assemblages.

Two unidentified medium mammals and at least eight different species of wild birds were found. Some of these bones could be intrusive, as the events associated with the period are just below the modern surface. Three species were unique to that context: a Hooded Merganser, a teal and a passerine. These, with the Red-Throated Loon, are species that live mainly in forests and near lakes (Figure 21). It is possible that during the 19th century, French fishermen would venture more into the interior in search of freshwater fowl. However, the small size of the assemblage makes any precise interpretation difficult.

The cod bones from the bread oven constitute the other 19th-century French context. This assemblage is interesting because of the body representation of fish, which consists mostly of elements attached to the tongue. As these cod bones were found in the stratum related to the use of the bread oven, it is reasonable to interpret this assemblage as remains of cod tongues cooked in the bread oven. The bread oven, it seems, was used not only to bake bread but also to cook other type of meals. Such meals may well have been cooked in wares such as the Huveaune *écuelle* found in association with the codfish bones.

5.1.3 Conclusion

A closer look at the exploitation of wild fauna, as represented in both historical sources and zooarchaeological data, has permitted delineation of three main consumption behaviours. First, as suggested by the historical documents and apparently confirmed by the assemblage from the Feature 1248, burnt structure, hunting and consumption of wild mammals and birds was, for the most part, limited

to crew members of higher social status, such as the captains, the surgeons and other officers. The rest of the crew could also eat wild animals, but of a smaller variety than the officers.

Second, the exploitation of land game, such as hare and caribou, and of lake and forest fowl was fairly limited. The absence of fur-bearing animals, such as foxes, beavers, otters and martins, is not surprising, as the French were not allowed "to benefit themselves in any Degree by the Produce of the Countrey Except merely Codfish" (Banks 1766: 146). Although impossible to prove, French trade with Anglo-Newfoundlanders and First Nations populations should not be ruled out. As Jean Conan explained, the French sometimes had very close relationships with Native groups on the Petit Nord, Native women "entertaining"[4] the officers in exchange for food and clothing (1787, in Querré 1998: 222). In addition, French and Anglo-Irish settlers often benefited from mutual friendship in the 19th century, as the latter guarded French stations during the winter. The French may have procured some of their wild game from the local permanent population or visiting Natives.

Finally, Dos de Cheval fishermen consistently exploited seabirds and shore birds. This emphasis on the exploitation of coastal species, and the general lack of land mammals in excavated assemblages, leads one to wonder if the temporary nature of the fishers' occupation resulted in an exploitation of resources in the known

[4] Jean Conan (1787) explains that male Natives would come each week at Saint-Julien to bring their wives to entertain (*divertir*) the officers, in exchange for clothes and food. According to Conan, among Natives (*sauvages*), the men are not jealous. To the contrary, he says that they seem proud to see their wives being caressed by other men.

environment, fishermen avoiding venturing into the unknown interior of the Great Northern Peninsula. Because of the very nature of their work on shore, fishermen are naturally oriented towards the water. The cod fishing industry requires a close relationship with the ocean. Therefore, it is not surprising that fishers exploited species like seabirds; from the Common Eider to the different species of gulls, or the Black Guillemots and Common Murres. The proximity of seabird colonies offers an easy complement to a boring diet of biscuits, lard and cod. Out at sea, fishermen from Cap Rouge harbour could easily exploit the Black-legged Kittiwake colony at Groais Island or the Herring Gull colony on Rouge Island, at the mouth of the harbour (Figure 22).

5.2 Husbandry and Butchery Practices

The basic diet of fishermen is well-documented, as many provisioning lists are available (de la Morandière 1962). Provisions on transatlantic fishing vessels have some constants, for example, biscuits and alcohol (wine, cider and/or brandy), and some variants, such as the proportion of fresh and salted meat, fatty products such as lard, butter or olive oil, dry legumes, vinegar, and other products such as spices and tea/coffee (de la Morandière 1962: 77-81; Turgeon and Dickner 1990). Fishing vessels in the 19th century often carried a greater variety of products than ships in the 16th and early 17th century. Nevertheless, the basics of fishermen's diet did not undergo major changes between the 16th and the early 20th centuries. Salted and dry foodstuffs composed most of the diet on board.

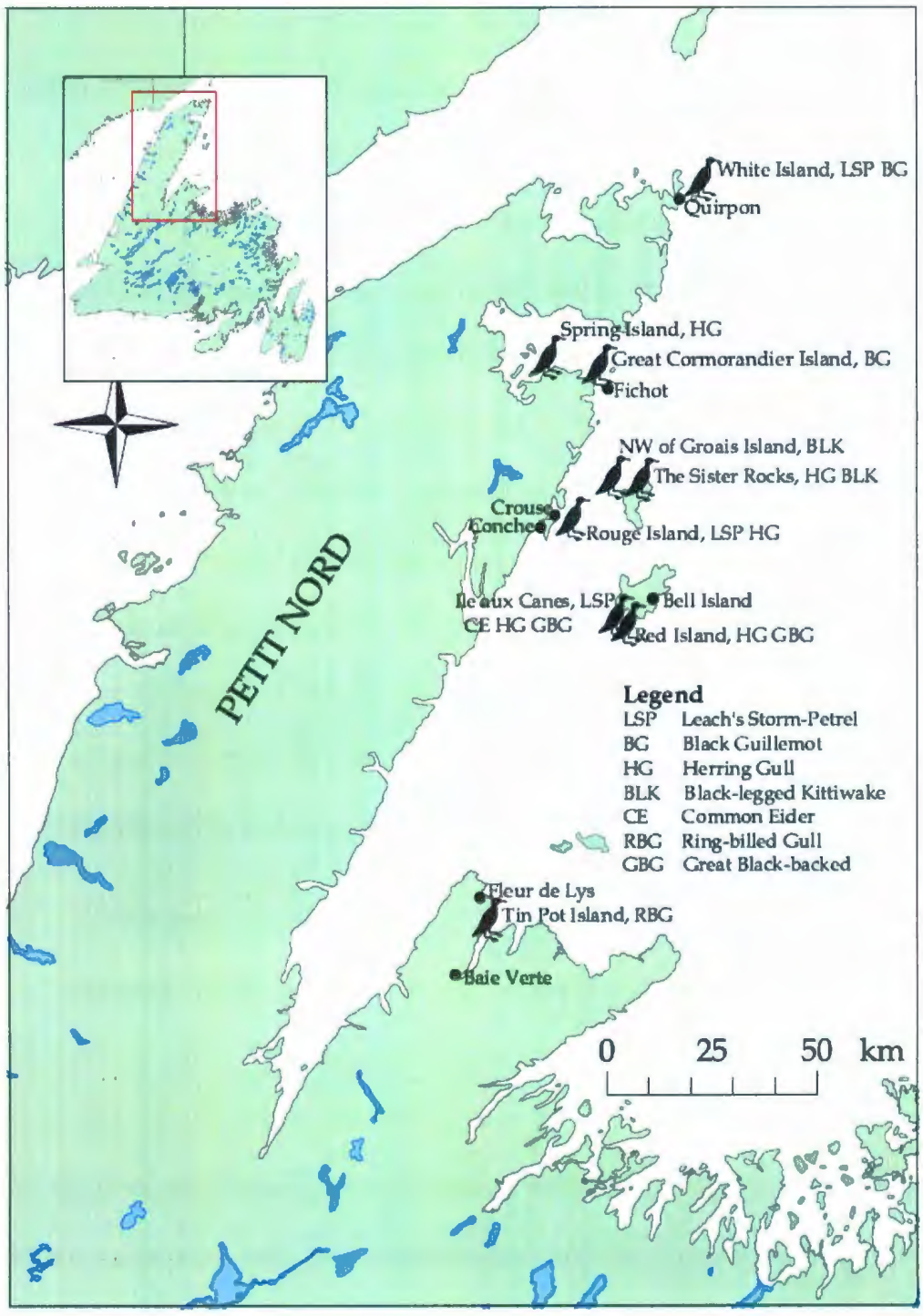

Figure 22. Seabird colonies on the Petit Nord coast (Source: Marco Chiaramonte for An Archaeology of the Petit Nord)

In this section, three main questions are addressed. First, pig was the most abundant mammal on the site and was represented by elements from the whole body. If we were to look solely at the faunal remains found on the site, we would assume that most of the pigs were probably raised and slaughtered on the site. However, pigs only appear on provisioning lists as salt pork, and not as live animals. How can we explain the discrepancies between the historical documents and the zooarchaeological assemblages? Second, pig slaughtering patterns from the different contexts are interpreted. Are there any differences between the periods of occupation of the site? Can we infer, even roughly, an estimated season of death, assuming a spring birth from March to May? Third, pig and caprine butchery patterns are analyzed and interpreted. Are there any changes through time? Are there any significant differences in the type of butchery between pig and caprine? Are they mostly communal or individual cuts?

5.2.1 The Pig Issue

Salt pork was the staple meat product loaded on French cod fishing vessels (de la Morandière 1962). Pigs are very well represented in the faunal assemblages from Dos de Cheval, where they are, consistently, the dominant mammalian taxon. Apart from salt pork, provisioning lists sometimes included live sheep, goats, cattle, chickens, geese and ducks (de la Morandière 1962: 81; Querré 1998: 71). Live pigs are, however, not mentioned. Historical documents and archaeological examples of barrelled pork are presented below in order to create a model of expected body part

representation. The Dos de Cheval pig assemblages are then compared, to assess the presence of salt pork or live animals on the site.

5.2.1.1 Expected Body Representation of Barrelled Pork

The task of establishing a model of body part representation for barrelled meat is difficult, mainly due to the lack of comparative data. However, some general patterns can be inferred using historical documents and archaeological examples. The French *Traité d'Honoré Chéris* of 1762 regulated the supply of the vessels, galleys and other ships of Louis XV. It stipulated that salt meat should be provided without hocks, feet or heads (Anon 1762: 29). This document also specifies that salt beef should be deboned of the large marrow bones. According to Article XXIX, no pig smaller than one hundred pounds (*poids de marc*[5]) should be used to make salt pork (Anon 1762: 30). According to the standard butchery practices in early 19th-century Montréal, there were three qualities of pork for export: mess, prime and cargo (Morris 1820). The top quality, mess, was supposed to include only ribs of fat hogs. The second quality, prime, was to include the next best pieces, not more than three shoulders without the legs, and not more than 20 lbs of head, with the ears and snout cut off. The third cheapest grade, cargo, was to include not more than four shoulders, without the legs, not more than two heads, with the snout and ears cut off. In all grades, no feet were to be present. The legs were to be cut above the knee and gambrel joints (Morris 1820: 7).

[5] The *marc*, an ancient French weight measure, equals eight ounces, half a pound, or 244.8 grams.

A salt pork cask has been excavated from the wreck of the *Mary Rose*, which sank accidentally during an engagement with the French during the Battle of the Solent, in 1545 (Gardiner 2005: 16). This barrel contains no head bones or limb extremities, and the vertebrae and ribs have been split open and chopped. There are bones on each side of the knee (femur-tibia) and elbow (humerus-ulna-radius) joints (Coy *et al.* 2005: 574). The *Mary Rose* was the flagship and pride of Henry VIII's navy, so it is not surprising that the salt pork loaded on the ship was of good quality, with many ribs and no head parts (Gardiner 2005: 11).

Excavations from the wreck of the *William Salthouse*, a Canadian trading ship that sank in 1841 near Melbourne, Australia provides evidence of barrelled pork (Staniforth 1987; English 1990). According to the cargo list, the ship contained 355 barrels of salt pork (English 1990: 52). Although the archaeological context was not as clear as the last example, some general trends were observed in the pig body part representation and butchery. This sample was found in association with casks branded "Prime Mess". Many skulls were present, as well as ribs, all vertebrae, pelvis, and many hind and fore quarters. No elements from below the tibia, expect one tarsal, and no elements from below the ulna/radius were discovered, thus indicating avoidance of lower feet in barrelled pork (English 1990: 56-58).

The English sailor Samuel Kelly, who served on board a packet ship in 1781, observed that "This ship being a contract one, our provisions were of infamous quality... the barrels of pork consisted of pigs' heads with the iron rings in the nose, pigs' feet and pigs' tails with much hair thereon" (Garston 1925: 29).

These examples can help determine which bones were included in barrelled pork. However, they are somewhat contradictory. The only consistency observed in four of the five examples is that the feet were not included. This model can now be compared with the faunal remains from Dos de Cheval.

5.2.1.2 Pigs at Dos de Cheval

Both of the late 17th-early 18th-century assemblages resemble the model for barrelled pork. There is a low representation of feet elements, a medium representation of hind and fore quarters, and a high representation of head parts (Figure 16). The high representation of head parts is mainly due to statistical reasons; only one small skull fragment is needed to give the skull an MAU of 1, while we need five cervical vertebrae to get the same result. The low representation of axial skeletal remains is also in part due to the identification of most vertebrae and rib fragments as Medium Mammal.

The deposit from the burnt structure (early to mid 18th century) presents a very different pattern (Figure 23). This assemblage does not match the barrelled pork model established earlier. These elements could represent butchery of pigs that were brought to the site alive, or bought from local Anglo-Irish settlers. It is possible that the trotters and heads were consumed as a result of culinary tastes. The assemblage could represent the preparation of the typical French meal of *fromage de tête* (head cheese), in which the head and often the lower legs were boiled in a broth. After being boned, the meat was left to cool down in a pie dish (*terrine)*, covered by the cooking liquor, which would form a gelatinous stock (Peeters 1980: 252). This

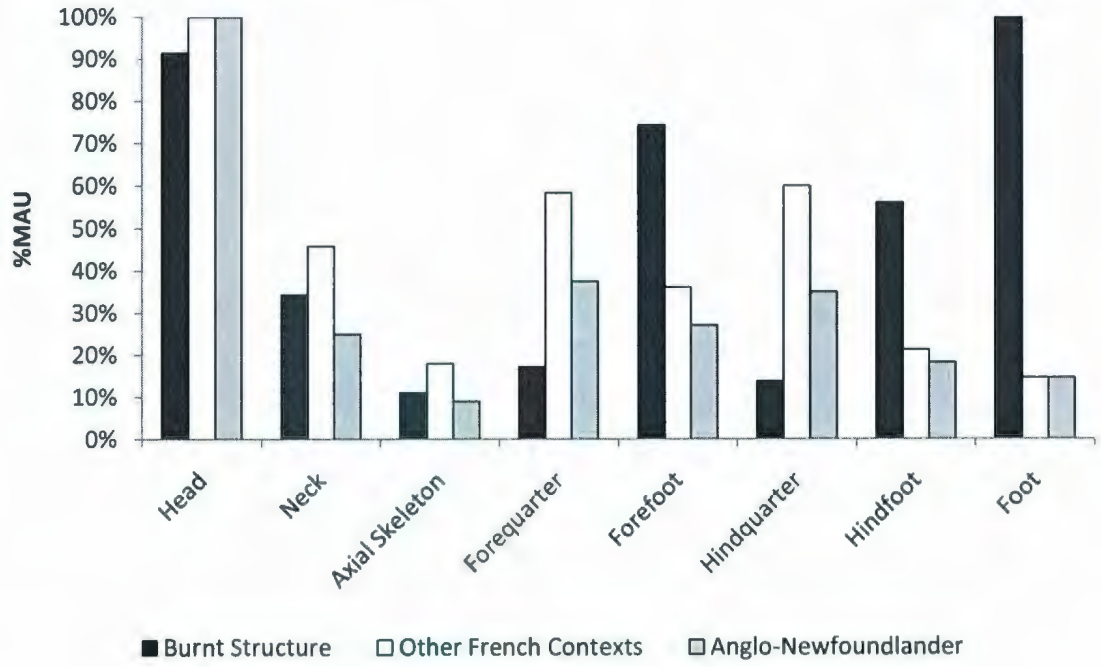

Figure 23. Pig Remains as %MAU for the Burnt Structure (EF3: Early-Mid 18C), the other French contexts (EF1, EF2, EF4 and EF5: Late 17C-19C) and Anglo-Newfoundlander context (A-N), by Body Part.

cooking technique would preserve the meat which could be consumed for many days after its preparation. Trotters were also often cured in salt to be subsequently used in soup (Peeters 1980: 252). Trotters were often considered delicacies and were much praised (Coy *et al.* 2005: 576). The butchery marks on the phalanges and metapodials suggests that they were prepared and consumed (Appendix 2; Figure 34 and 35). While it is possible that trotters could have been salted and brought in the ship as some crewmember's special private reserve, it is more likely that they represent the presence of live pigs on the site.

The mid 18th-century assemblage most likely represent the remains of salt pork of a lower quality, which could explain the presence of metapodials and phalanges. As argued by Betts (2000), historical documents indicate that finding feet in good quality barrels was a constant problem at 18th and 19th century Fort George, located on the western mouth of the Niagara River, Ontario. The late 18th-century French assemblage likely represents the remains of pigs kept and slaughtered on the site. It is possible that some of the pig bones discovered in this deposit could be from better quality barrelled salt pork. The Anglo-Newfoundlander context (c.1790-1815) shows a pattern more related to the keeping of live animals than the consumption of salt pork. Hind and forequarters and axial skeleton elements are not well represented. Hence, it is possible that migratory Anglo-Newfoundlanders were keeping pigs on the site during their summer residency. The French 19th-century context suggests mainly barrelled pork. There is a relatively high representation of hind and forequarters and heads. The low representation of axial skeleton elements is

probably due to the fact that most of the ribs were grouped in the Medium Mammal category. However, this sample is fairly small compared to the others and patterns observed in it should be considered carefully.

In conclusion, it is very difficult to assess the presence of barrelled pork on terrestrial sites, as also suggested by English (1990: 59). As barrelled salt pork was the staple of French fishing expeditions, it is quite possible that a large majority of the pig elements present on the site represent this type of preserved meat. The problem in distinguishing barrelled pork from fresh pork comes from the lack of suitable reference assemblages and from the highly variable techniques among butchers and among geographical regions. A review of different sources stressed those differences. Although no documentary evidence for the transport of live pigs on French transatlantic fishing vessels has been found, certain assemblages from Dos de Cheval seem to attest to the presence of live animals on the site. Another source for live pigs, which should not be overlooked for the later occupation of the site, is possible trade between French fishers and local Anglo-Irish settlers.

In terms of livestock, fishermen preferred to bring sheep, goat and cattle rather than pigs (Querré 1998). These herbivores could roam relatively freely on the second terrace of the site, for example. The environment on the Northern Peninsula is not suitable for large-scale animal husbandry, as the grasses are of poor quality and thin. Yet, Anglo-Irish settlers in outport communities in Newfoundland, until the 1960s, left their livestock loose in the summer to feed themselves (Omohundro 1994: 156). This meant that gardens had to be securely fenced. While pigs are also easy to take

care of, as they eat everything, this behaviour could become problematic on a fishing station. While the other livestock could be left alone without much attention, pigs would have needed to be securely enclosed. One can only imagine the damage that a few pigs could do to the codfish left on the ground to dry. In descriptions of French fishing stations, there are no mentions of stables, pens or any other structures related to animal husbandry. It is possible that some pigs were brought in the ship, slaughtered during the trip to Newfoundland, and the remaining slaughtered and salted on arrival, for consumption throughout the summer.

5.2.1.3 Pig Slaughtering Patterns

The age at which an animal is killed relates to a specific use or combination of uses. The optimum time to kill livestock for meat is mainly based on weight gain compared to food intake. As an animal approaches its full adult size, its growth rate begins to decrease while its intake of food does not (Landon 1996c: 96). When used for draft, dairying or wool-production, cattle and sheep would be killed later in their lives, in order to maximize production. Animals raised for food are mostly killed just before they are fully grown (Bowen 1998: 140; Landon 1996c: 96).

Pigs were raised only to produce food. In medieval slow-growing breeds of pigs, the animals born in spring reached an age of around 8 months at the beginning of their first winter. At that time, they were not fully grown and killing them would not be an economic choice. Pigs should normally have reached the plateau in their growth curve at their second winter (about 20 months old), or at most their third winter at about 32 months old (Ervynck 2005: 153). These ages are based on the

assumption that swine gave birth in the spring, between March and May. However, given an adequate food supply and a knowledgeable pig breeder, swine could give birth twice a year; a spring farrowing in February-April and a fall farrowing in August-October (Landon 1996c: 105; Lauwerier 1983: 483-484; Williams 1977). When left alone though, pigs have a tendency to follow the pattern of wild boar and give birth once a year, from March to May (Lauwerier 1983: 484).

At Dos de Cheval, pigs were chosen for further study of slaughtering patterns because it was the only species which provided statistically significant age data. In the French late 17th-early 18th-century deposit, the small sample indicates that pigs were slaughtered between 1 and 2 years. If we assume that most swine farrowed in spring, between February and April, the one year old pig would have been killed right before the fishing season, which started in April. This would seem to support the interpretation that pig elements arrived on site as salt pork.

Precise ageing of pigs for the French mid 18th-century Feature 1248, burnt structure, is difficult, as most of the fragments are from phalanges and metapodials. They often only give a greater than 12 months or a less than 24 months age range. Therefore, it is very difficult to infer any seasonal information. Nevertheless, we know that pigs were slaughtered in an economical fashion by killing the pigs near their growth rate plateau. The French early-mid 18th-century deposit is fairly consistent with the older assemblage. It seems that most pigs were killed during their second year, with few killed between 6 and 12 months. If we again assume that spring births were most common, the pig aged 16 to 20 months could have been

killed from July to December, possibly during the fishing season, as the fishermen often stayed in Newfoundland until November. However, this inference is based on the uncertain assumption of a spring birth and should be evaluated carefully. A fall birth would mean that the same pig would have been slaughtered sometime between March and June, possibly before the fishing season.

The slaughtering pattern of the late 18th-century French deposit is very similar. Most animals were killed between one and two years old, thus maximizing production. Pigs killed between 12 and 16 months may have been killed before or during the fishing season.

The slaughtering of the pigs in the Anglo-Newfoundlander deposit differs significantly from the earlier French periods. Pigs in this context were slaughtered around or below one year old more often than in the French contexts. This could be the result of a less organized slaughtering system, in contrast with the French agricultural economy, which necessitated a well organized pig husbandry system to meet the demand of the cod fisheries (Querré 1998: 90).

The slaughtering patterns of the 19th-century French deposit are similar to the earlier French periods. One specimen is aged between 12 and 16 months. Assuming a spring birth, this pig would have died sometime between April and August, possibly during the fishing season.

It must be stressed that the seasonal information inferred here should not be taken as facts, but rather as possible interpretations. Inferences on seasonality

through the use of tooth eruption and wear are only valid if the season of birth can be persuasively established (Landon 1996c: 97). This is however not the case for this assemblage. The great demand for salt pork in Brittany and Normandy could have forced the farmers to breed their swine twice a year to catch up with the demand. In normal circumstances, pigs were killed in late fall-early winter for two main reasons: 1) to maximize the meat production as pigs would lose fat during the cold season and 2) to facilitate salting of meat, as the carcass needs to chill thoroughly (Landon 1996c: 112). This pattern of late fall-early winter slaughtering makes sense for permanent settlements. However, it is hard to believe that pigs needed to make salt pork were slaughtered four months before the departure of the first fishing vessels. The seasonal nature of the fisheries could have significantly modified the husbandry practices of the rural farmers in northern France. In order to answer questions of slaughtering seasonality, more sophisticated and precise methods could be used, such as tooth cementum increment analysis (cf. Landon 1993 and 1996c; Coy *et al.* 1982; Bourque *et al.* 1978; Wilson 1978). Further research in regional archives might also shed light on such practices.

5.1.1. Butchery Patterns

The interpretation of butchery marks explores major trends in butchering of pig and caprines' carcasses. When possible, differences between the French and English assemblages, and differences and similarities between pig and caprine butchering are outlined.

5.1.1.1. Pig Butchery

Only three assemblages had sufficient cut marks to produce a general carcass division drawing (Figures 24, 25 and 26). The interpretation of the butchery is made by anatomical parts, in chronological order of contexts. The drawings summarize the butchery patterns observed in Chapter 4. However, the sample is very small and virtually all supposed division in the carcass is based on one or two observed marks. Consequently, the information provided by butchery patterns must be cautiously interpreted.

Only the Anglo-Newfoundlander context provided evidence of butchery from the head elements (Figure 26). Two mandibles, possibly from the same individual, were clearly sawn in the middle of the second molar, and one had a shear mark cutting horizontally through the vertical ramus. As no comparison can be made with the French contexts, any cultural interpretation is difficult. It does not match the division of mandibles noticed in colonial Boston, where the cut is made between the canine and premolars (Landon 1996b: 94). The emplacement of the two marks however parallels butchery marks on pig mandibles from 15th- to 16th-century contexts at the Monastery of La Charité-sur-Loire in France (Audoin-Rouzeau 1987: 45). These marks were made to extract bone marrow from the mandibles, probably to add proteins and flavour to a broth.

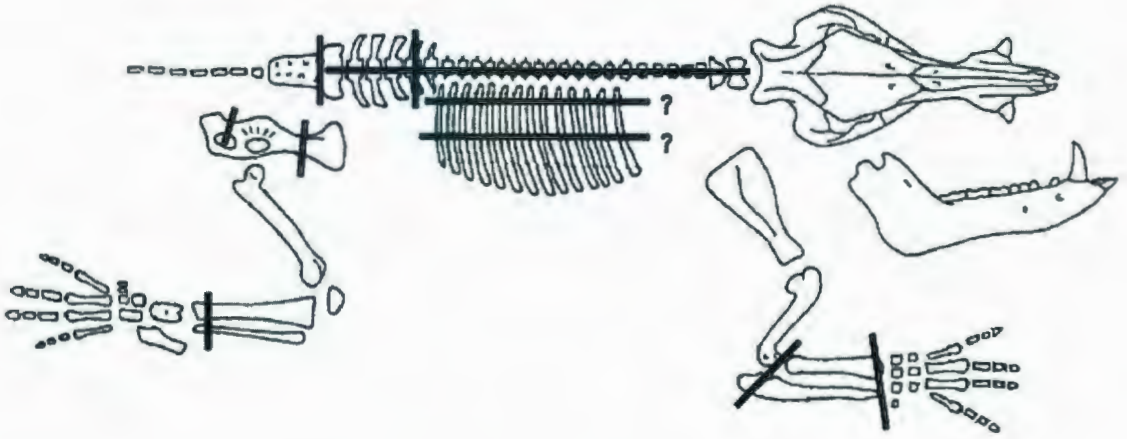

Figure 24. Division of pig carcass from Mid 18C context (EF4, Events 1059 and 1063), EfAx-09, Area C (Image modified from Landon 1996b).

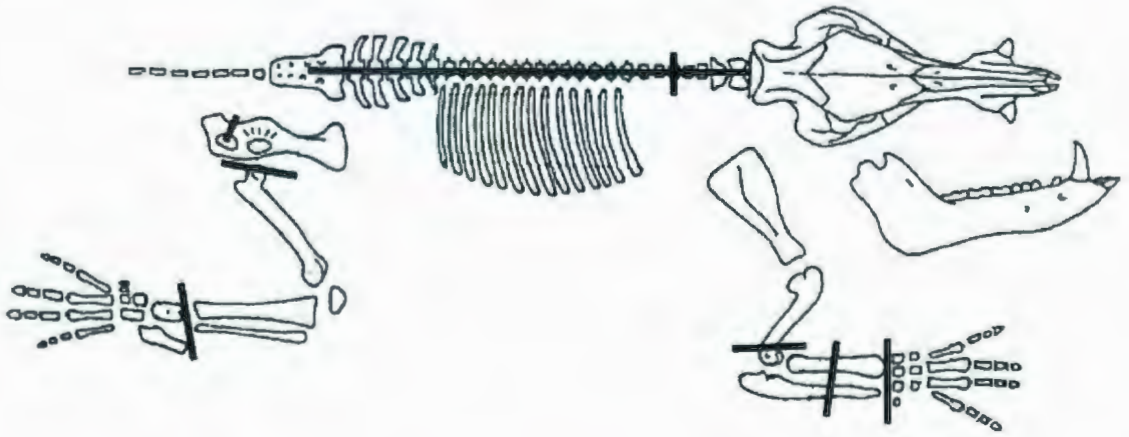

Figure 25. Division of pig carcass from Late 18C context (EF5, Events 1011 and 1019), EfAx-09, Area C (Image modified from Landon 1996b).

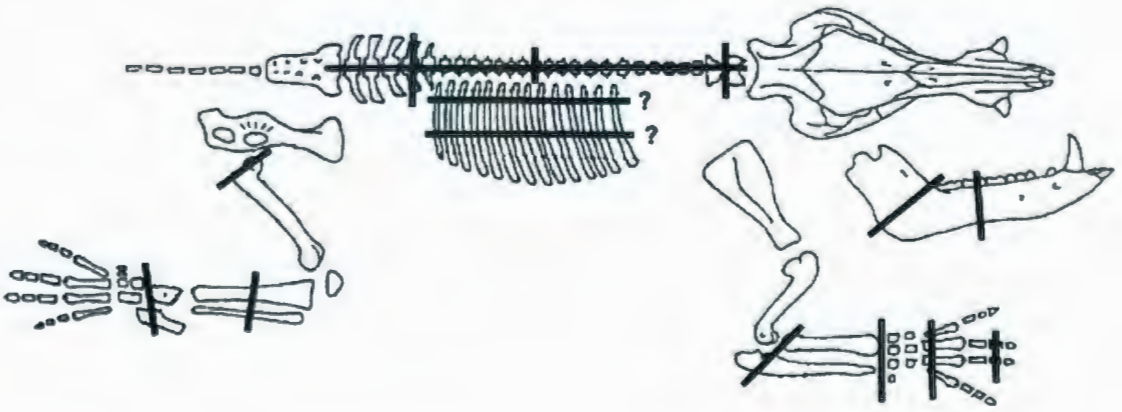

Figure 26. Division of pig carcass from Anglo-Newfoundlander context (c.1790-1815), EfAx-09, Area C (Image modified from Landon 1996b).

The vertebral column of all three periods shows signs of being cut longitudinally. Regarding the splitting of the vertebral column, there exist two "schools" that essentially developed during the medieval period. The first one is used today by butchers for pork, beef and mutton, and consists in dividing the vertebral column in two, creating two symmetrical halves. It is the one observed in all periods at Dos de Cheval. The second method, long used for pork and still in use in certain rural regions of France, consists in separating the carcass by practicing two parallel cuts along the spinal cord. At the monastery in the Loire region, it was used until the 14th century, after what it quickly changed to the single split method (Audoin-Rouzeau 1987: 36-37). Some vertebrae from all parts of the column exhibited evidence of being cut transversally. It is very difficult to determine the exact position of an isolated vertebra, but these transverse marks were probably made to cut up the carcass into specific cuts of meat, like loins or spare ribs.

Other practices varied. The distal end of the forequarters was butchered through the elbow in all three contexts. This is to disarticulate the hind quarters from the lower foreleg. In the late 18th century, this was done on the distal end of the humerus, while in the other contexts it was made through the proximal ulna. This is most probably related to an individual butcher's practice, rather than to a difference in cultural practices. At Dos de Cheval, the forefeet were consistently separated from the rest of the body by cutting between the distal radius and the first row of carpals. In the Anglo-Newfoundlander context, the feet were sometimes cut through the metacarpals. An intermediate phalange, which could also be from hindfeet, was cut

in half during the preparation for consumption. The pelvis of both French contexts had a recurrent cut mark on the pubis. This may have been made to carve away the ham piece. The hindquarters were cut off by a clear cut mark through the head of the femur. This was done to disarticulate the femur from the innominate. For the French contexts, the hindfeet were separated from the hindquarters by cutting on the distal end of the tibia or through the proximal end of the astragalus. However, in the Anglo-Newfounlander context, this was made further down, through the calcaneum (Figure 26).

The analysis of butchery marks is informative of the principal divisions of pig carcasses. However, the assemblages at Dos de Cheval are not large enough to securely approach questions of culturally-patterned butchery. The fact that some pigs on this site were butchered by skilled butchers in France to make salt pork and others by fishermen in Newfoundland for fresh pork probably also affects the butchery patterns. Distinguishing between salt pork cuts and fresh pork cuts is almost impossible for two main reasons: 1) both retail cuts and salt pork cuts are very similar; and 2) the archaeological examples of salt pork are too few to be able to detect salt pork butchery in a terrestrial site with certitude (English 1990).

5.2.1.4 Caprine Butchery

The insufficient number of caprine bones made it impossible to sketch a useful carcass division drawing like the ones made for the pig. However, general comments can be made on caprine butchery. Only one mandible was found, in the early-mid 18th-century context. This mandible was apparently chopped to extract the bone

marrow. The vertebral column was cut longitudinally, like the pig column. However, it seems that the butchers who processed the carcasses, especially from the French periods, made their cut at a very oblique angle. In some cases, cut marks are also on one or the other side of the centrum, instead of being cut right through it. In French contexts, some transverse cuts were made on an atlas and cervical vertebrae. These marks are very crude, especially on the cervical vertebra from the Late 18th-century French assemblage. It took at least four blows of a cleaver to finally cut through the vertebra. This kind of multiple hacking is not desirable, as it mangles the meat and leaves splinters of bones in the meat (Audoin-Rouzeau 1987: 35). Whoever butchered this sheep was probably not a skilled butcher. The ribs were either chopped or sawed in different positions. The break in the femur in the mid-late 18th-century assemblage possibly relates to the division of the hindquarter from the rest of the leg. Some metapodials in both the French and Anglo-Newfoundlander contexts seemed to have been split lengthwise or crosswise to extract the bone marrow. A radius broken crosswise also seems to have served a similar purpose.

In general, the butchery of caprines seems to have been cruder than the pig butchery attested on this site. This may be due to the fact that caprines were slaughtered and butchered on site, while most of the pigs would have been killed in France and cut up by professional butchers, who would then barrel the pork as salted meat. The saw was only used on one rib, and possibly on a cervical vertebra, while pigs yielded many saw marks. This may have been related to the tools available on the fishing station to process carcasses. For many uses, the saw is faster and more

efficient than a cleaver, and would probably be the tool of choice in an abattoir processing many pigs. However, the occasional butchering of sheep on the site did not necessitate the use of a meat saw.

Finally, it is difficult to determine whether the cuts of meat were of individual or communal sizes. No obvious individual cuts were observed in either pig or sheep, which suggests service of large communal pieces of meat. As explained by Denys (1672), fishermen usually ate in groups of 14 (*sept par sept*), which means that they probably shared large cuts boiled in a large cooking pot. The captain and the officers probably also did the same. More precise and discrete contextual information could possibly help assess if the captain and his officers were eating better or more individually butchered cuts of meat.

In light of the zooarchaeological and historical data presented in the preceding chapter, the two general objectives laid out at the beginning of this thesis can now be discussed. These relate to how food helped create and maintain a socially stratified class system in two senses: the fishermen as a socio-professional class in France and the social hierarchy within the fishing crew.

6.1 Food and the Formation of the Fisherman Identity

What is eaten is one of the defining characteristics of individual or group identity. Foodways are one of the earliest-formed layers of a culture, and it has been demonstrated by American ethnologists to be particularly resistant to change among ethnic groups immersed in a new social environment (Kalčik 1984: 39). Food not only fills a physiological and nutritional need; the type of food eaten, as well as its preparation and presentation are embedded in a culture and play a role in defining a group's identity.

Turgeon and Dickner (1990) explored the role played by food in the formation of the newly created group identity (*groupe d'appartenance*) of French mariner-fishermen in the 16th century. They note that the narratives of the period describe the foodways of the fishermen as dry, monotonous and repulsive, which in turn would have helped shape the fisherman identity by making the foodways an obstacle to

overcome. These peculiar food habits would feed the image of a virile and courageous fisherman (Turgeon and Dickner 1990: 67).

In the early modern period, Europeans were highly dependent on what could be grown in a given season or preserved for later use (Albala 2003). Preservation was especially important for fishermen, as preservation issues restricted what they could bring in the ship's cargo. Like the soldiers' diet, fishermen's diet was tightly controlled, and regulated by various ordinances and treaties. These material constraints obviously limited the range of choice individuals had. Fishers ate similar products both in France and in Newfoundland (salted meat, bread, butter, wine, legumes, etc.), and prepared in very similar ways, notably as potage, which was the base of the French diet (Brillat-Savarin 1965: 87). One of the differences between the fisher staying in Newfoundland and the fisher living in France was that the latter had the opportunity to make more choices (Albala 2003). Another difference between the fishing life in Newfoundland and the life in France was the consumption of biscuits, that hard and dry bread, during the fishing expedition (Tannahill 1989: 225). Often full of weevils, these biscuits were not consumed by choice, but by necessity (Tannahill 1989: 225-226). These biscuits were eaten instead of fresh bread, at least until the late 18th or early 19th century when fishermen built bread ovens on the Petit Nord (Godbout 2008). As for meat, it seems that most of it was salted. While salted products were important during the harsh winter months in Europe, having to eat them all summer long probably caused much frustration among sailors.

While it is hard to assess the importance of salt pork versus fresh pork from the zooarchaeological evidence, it is very likely that animals were sometimes kept on the site for consumption of fresh meat (pig, sheep, goat, chicken and turkey). Wild meats, except for seabirds, were for the most part only available to officers of higher social status. As suggested by Turgeon and Dickner, the material constraints and the choices (or lack thereof) in the food products was probably the major defining characteristic of the early modern French mariners-fishermen (1990). In this case, the type of food consumed helped define the profession itself. Although there are regional and temporal variations in products, the diet of a sailor was defined by two main principles: dryness and saltiness.

6.2 Classes in the Fishing Stations

The French crews in transatlantic fishing vessels were structured by a clear, established hierarchy. Generally speaking, at least from the 16th to 18th century, there were four distinct classes in fishing crews: the officers, the sailors (*matelots*), the novices and the apprentices (*mousses*).

The officers varied from crew to crew, but normally consisted of the captain, the pilot, masters, the surgeon(s) and the chaplain(s) (de la Morandière 1962). The captain was at the head of the fishing activities. When the captain was not comfortable navigating the ship, a pilot was hired. His task was specifically to navigate the ship to the final destination, after which the captain took over the

control of the fishing operations (de la Morandière 1962: 97). The masters could be in charge of different activity areas in the fishing station, such as the *chaufaud* or the *galets*. The hiring of a surgeon for fishing voyages to Newfoundland was mandatory for crews of 20 or more men, which was the case for most shore-based fishing ventures (de la Morandière 1962: 99; Service éducatif 1996: 41). The hiring of a chaplain was mandatory by an ordinance of 1694, ordering each long run (*long cours*) ships with a crew larger than 25 men to hire a chaplain, priest or monk who would have the right to sit at the captain's table (de la Morandière 1962: 105). This obligation was difficult to meet, as the priests did not necessarily want to brave the dangers of a fishing campaign and be in close contact with sailors whose behaviour might be crude. The sailors were experienced seamen, normally over 18 years old. The novices were inexperienced seamen who would later become sailors. They were normally aged between 16 and 25 years old. The *mousses* or apprentices were children hired for multiple harsh tasks. It was not uncommon for children of between 8 and 10 years old to be hired in the 16th and 17th centuries. However, an ordinance of 1670 fixed the age of apprentices between 12 and 16 (de la Morandière 1962: 95).

The hierarchy inside the fishing station partially paralleled social classes in Brittany. The social classes and the distribution of political power in early modern Brittany closely followed the distribution of economic resources (Collins 1994: 71). The different socio-economic groups, which might be considered as classes, were: 1) the rural and urban workers, whose economic revenue came from the sale of their labour (i.e. *mousses* and novices); 2) the small holders (shopkeepers, artisans, and

more experienced fishermen); 3) the medium-level peasants; 4) the rich peasants; 5) the merchants; 6) the legal people; and 7) the noble landlords (Collins 1994: 60-61). There was a well-established structure in both the fishing crew hierarchy and the Breton socio-economic hierarchy. However, there are many differences that need to be outlined.

The status hierarchy in fishing crews was not directly based on personal income or on the inheritance of titles. While personal income differed between officers and novices, for example, rank was earned by experience and not based solely on economic capital. In order to become a sailor, the novice would need to have been part of at least two or three fishing expeditions (de la Morandière 1962: 109-111). To become a captain, one had to be gain the title of master. The ordinance of the *Amirauté* of 1584 established that the master of the ship needed to have navigated for at least five years, and have been examined and judged capable to command a ship (de la Morandière 1962: 98). The ship-owners had significant economic power and were probably high up in the hierarchy of Breton society, possibly in the merchant class. But the fishermen themselves were mostly part of the same two lowest classes in France, whether they were novices, sailors, masters, or even captains.

The fishing crew can be seen as a micro society, where social hierarchy was well established and based on experience and respect. Often, zooarchaeologists studying a society's class system through faunal remains use social status and economic income indiscriminately and sometimes even as synonyms (i.e. socio-

economic level, socio-economic status). While social and economic statuses are often closely tied together in certain contexts, such as an urban environment, this was less true of the fishing station. Here, stratification was based on acquired social status and not necessarily on economic level. The study of food opens a window into the social world of French cod fishermen.

6.3 The Concept of Luxury Foods

The notion of luxury is particularly relevant for discussing the food consumed in fishing stations, and particularly by the officers. Luxury food was treated in length in a special issue of *World Archaeology* in 2003 (van der Veen 2003; Ervynck *et al.* 2003). The concept of luxury, especially in food, is not easily defined. Broadly speaking, luxury foods could be defined as "those foods that offer refinement in texture, taste, fat content or other quality (such as stimulant and inebriant) and offer distinction, because of their quantity or quality" (van der Veen 2003: 405). They can also be defined as "the consumption, beyond the level of affluence, of goods that are special, limited in supply, difficult to procure or very expensive for other reasons" (Ervynck *et al.* 2003: 429). This being said, what is "luxury" is deeply embedded in the cultural, social and geographic contexts of its consumers. Needs and luxuries are two of the main oppositions in the sphere of consumption (Bourdieu 1979: 198). They are relative notions, just as poverty is (van der Veen 2003: 407). A good example of a geographically-defined luxury is the hunting of deer in England. During the late-medieval and post-medieval period, hunting was reserved to the nobility as a

result of game laws (Ervynck 2003 *et al.*: 432). When the first colonists arrived in the New World, its vast lands and the potential for unrestricted hunting modified the status of wild meat from a luxury available only to gentry, to a resource available equally to all individuals (Hodgetts 2006: 128).

In zooarchaeology, luxury foods can be more easily recognized by searching for quality rather than quantity. With this in mind, luxury foods can be defined as those foods that are: 1) rare and expensive, 2) imported, 3) restricted to a certain class of society, 4) varied beyond the ratio of cost/nutritional value, 5) selected prime parts of an animal, and/or 6) from animals that are killed before their optimal slaughter age (Ervynck 2003 *et al.*: 431-433). Depending on the social, cultural and geographical contexts, each of these types of food might be considered a luxury. This brings us to a discussion of the luxury food consumed by the officers at Dos de Cheval.

6.4 Luxury Foods at a Seasonal Shore-Based Fishing Station

As discussed in Chapter 5, the faunal assemblage from a possible officers' cabin consisted of a large variety of wild animals. In certain permanent settlements, like Fort Michilimackinac, it was, arguably, greater reliance on domestic animals that distinguished the diet of the higher classes from the poor soldiers and farmers (Scott 1996). At Ferryland, a permanent 17th-century English fishing settlement in Newfoundland, the faunal analysis of an upper status household indicates that its

occupants had more resources to invest in activities unrelated to the cod fishery, such as raising cattle and hunting wild fowl (Tourigny 2009). The site of Dos de Cheval, in parts, fit these patterns, as the evidence summarized in this thesis suggests that hunting of wild game was mostly the prerogative of the officers. However, at Dos de Cheval, cattle or other livestock remains could not be linked to elite consumption. This divergence in consumption compared to the permanent sites of Ferryland and Michilimackinac is primarily due to the seasonal nature of the fishing expeditions, as well as the specific provisioning system and the social organization of the shore-based cod fisheries. For permanent settlers, the raising of livestock was often the prerogative of the wealthy individuals of a community, while wild animals could be hunted during leisure time. The fishing station was organized so that only a few privileged individuals had access to wild food.

The French migratory fishermen were on the coast of Newfoundland roughly from April to October or November. The timeframe in which cod was along the coast (roughly June and July) put a lot of pressure on the fishermen, and in turn affected the leisure time available to hunt wild game. Crewmen fished every day of the week, from very early in the morning to late in the afternoon, after which they came back on shore, unloaded their catches, had dinner and went to bed (de la Morandière 1962). On the Petit Nord, French fishermen even worked on Sundays, unlike the Anglo-Irish fishermen (de la Morandière 1962: 77). This time-constricted working environment made hunting of wild game difficult for lower status individuals, so that wild game became a luxury because access to it was effectively

restricted to those of higher status. In addition, it is likely that only certain privileged individuals had access to guns and shot.

6.5 Luxury Foods in Provisioning Lists

There is no doubt that most of what fishermen – officers and sailors alike – ate was brought as ship's supplies and not procured in the local environment, cod excepted. The dampness of the ship's hold greatly limited the choices of food they could bring with them; everything had to be salted or dried. Using the concept of luxury food, it is worthwhile to analyze at least one particular provisioning list for the Petit Nord fishery.

The *Grand Adrien Marie*, from Granville in Normandy, went on the Petit Nord in 1770, with 135 men, carrying a variety of products on board. The crew bought flour and wheat and, before sailing, paid women to prepare their biscuits. They also bought 3353 lbs of butter, 4413 lbs of lard, 20 *ruches*[6] (1000 lbs) of round peas, 476 pots of brandy, 86 *veltes*[7] of cognac (516 pints), five barrels of wine d'Aubagne, 108 barrels of cider, one milk cow, one heifer, one calf, eight sheep, 75 bundles of hay, one slaughtered calf, 118 lbs of beef, 8 dozen chickens, 60 dozen eggs, 34 lbs of beef *à la mode*[8], 34 lbs of pickled beef (*à l'écarlate)*, 34 lbs of larded sausages, shelled (*écalées*) and fresh (*en pierre*) oysters, one large barrel of cooked

[6] The *ruche* is a unit of measure used in Normandy. It equalled about 50 pounds of salt (in this case, peas).
[7] A *velte* was a liquid measuring unit equalling about six pints.
[8] *Bœuf à la mode* is a stew made of a slice of heavily larded beef pieces.

oysters (*huîtres adoubées*), vinegar, sardines, cheese, raisins, figs, beets, brown sugar, black pepper, onions, cloves, nutmeg, tea, coffee and jam (de la Morandière 1962: 80-81). While most provisioning lists were limited to biscuits, alcohol, salted meat and dry fish, this one is striking for the variety of products it contains. Certain products in this list could be considered a luxury in the context of the fisheries, such as the different types of fresh beef and oysters or the spices. These were not luxurious because they were overly expensive or rare. Instead, their presence in the ship cargo seems to relate to a taste for variety, rather than a nutritional or economic need. The large crew on this ship most likely resulted in the hiring of more officers. According to a 1681 ordinance, this crew should have hired at least two surgeons. It is possible that the large group of officers onboard demanded a larger variety of food than what was usual for most fishing expeditions.

The transport of live domestic animals in the ship cannot be seen as a luxury, compared to permanent sites where husbandry was mostly the privilege of higher status households. The fishermen were not breeding animals, as their preoccupations were directed towards cod. The sheep, goats and cattle were probably brought to the site, let loose in a field to feed, and slaughtered when need be. These animals did not require much time and effort, contrasting with the breeding and raising of livestock in permanent settlements such as Ferryland (Tourigny 2009). In the context of the fisheries, the consumption of domestic animals, salted or fresh, can hardly be seen as the privilege of only a few individuals. Officers had larger rations than the ordinary fishermen, but according to historical and zooarchaeological data, both classes

consumed meat from domestic animals. According to a 1762 treaty, fresh meat was important for the sick. Live sheep and fresh plums were brought onboard in order to serve fresh food to the sick seamen (Anon 1762: 10-11). Served occasionally, it also provided a welcome supplement to the basic diet of fishermen (biscuits, cod and alcohol).

6.6 "La Table du Capitaine"

There was a clear hierarchy within the micro society of the fishing station. Similarly, there was also a hierarchy evident in the organisation of space for food consumption within the fishing room. A particularly revealing aspect of the social organization of the fishing crew is the *Table du Capitaine*, literally the captain's table.

Participant-observers of the French fishery described how the fishermen, when they arrived at the fishing room, constructed many cabins for the officers and one especially for the captain (Denys 1672: 85; Duhamel du Monceau 1776: 152; Désury 1851; Carpon 1852: 62-63). Denys clearly states that the captain ate in his own cabin, along with the other officers: the master of the *grave* (the person in charge of the drying and salting activities), the pilot and the surgeon (1672: 171). In his 1852 book, the experienced surgeon Carpon mentions, on many occasions, the captain's table. The volunteers, those young men aspiring to be officers, were admitted at the captain's table with the other officers, thus their nicknames of "*mangeurs de beurre*" (butter eaters) (Carpon 1852: 3). At sea, the officers ate with much appetite in the *état-*

major room (officers' room) sheltered from the weather, while the sailors ate on the main deck (Carpon 1852: 19-20). Finally, Carpon describes the surgeon as the only one who could share the tranquility of the captain's table (1852: 59). The surgeon was in charge of cutting up the meat and serving the officers, in order of rank.

Sitting at the captain's table was a privilege reserved to the individuals of higher social status. Not only was the food better and more abundant, but it was also more varied, as demonstrated by both documentary and zooarchaeological evidence. The consumption of luxury foods had a "social meaning", considering that consumption is a system of meanings or signs (van der Veen 2003: 408; see also Appadurai 1986; Baudrillard 1988; Douglas 1984; Douglas and Isherwood 1979; Miller 1995). Eating luxury foods with officers at the captain's table was a means of advertising and displaying social status. Those luxury foods, and in turn the captain's table, were desired because they offered refinement of the basic diet, and were in turn a means of distinction because they were only attained by a few privileged individuals: the officers (van der Veen 2003: 420).

The captain's table was both a physical and a social construct. It was materialized as a distinct spatial area, a cabin on the landscape of the fishing station or on board a ship, from which the common fishermen were excluded. Socially, the very privilege of being admitted to this table was a way to distinguish oneself from the rest of the crew. In past societies with institutionalized forms of social ranking, such as fishing crews, the consumption of luxury foods was used to create and enhance exclusivity (van der Veen 2003: 405). In the fishing stations, this exclusivity

took a concrete, physical form: the captain's table, where his companions might expect to dine on small game and wild fowl.

CHAPTER 7: CONCLUSION

This thesis has used zooarchaeological and historical evidence to shed light on various aspects of the diet of French fishermen in Newfoundland. A socio-professional group of transatlantic cod fishermen emerged in France in the early 16th century. Material constraints as well as socio-cultural and political factors helped create foodways specific to these cod fishermen. This particular diet, in a way, helped shape the image of the cod fishers during the modern period: virile and courageous men braving the Atlantic Ocean and eating a monotonous diet of dried and salted food.

Through documents, historians and archaeologists know that migratory fishermen hunted and consumed a certain amount of wild animals. However, the question of who ate what has seldom been approached. I have argued here that fishing crews were structured by a clear social ranking, which in turn structured the amount and quality of food consumed by different individuals. Both the historical documents and archaeological data point in the same direction: hunting was reserved to the officers. The faunal data associated with the higher status cabin at Dos de Cheval match what would be expected at the table of the officers. This is reinforced by the fact that the captain and the surgeon were the only crewmembers with enough leisure time to hunt wild animals, as the ordinary fishermen were busy fishing and processing cod. The table of the captain was not only a physical place, but also a social space where officers could distinguish themselves from the ordinary fishermen.

Food was thus a way to enhance the exclusivity of certain classes within the fishing crew.

The faunal analysis suggests that at Dos de Cheval, seabirds were preferred over land mammals. The majority of wild land mammals are associated with the higher status context (Feature 1248). In the other contexts, the predominance of seabirds over land mammals could be linked to the fact that fishermen were naturally oriented towards the sea for their work. The fishermen exploited the environment and the landscape they knew, while they left the vast interior of Newfoundland alone.

In addition to the exploitation of wild animals, the zooarchaeological evidence demonstrated that domestic animals could have been brought over from France to Newfoundland. As shown by the ageing data, no neo-natal pigs were found on the site. Crews brought live adult animals and kept them on the site until slaughtered, thus providing fresh meat. Whether this fresh meat was available to all or to a restricted elite is hard to detect from the faunal data and historical evidence.

While butchery patterns did not provide much information on culturally specific practices, they are a starting point for further research. The detailed recording of butchery marks undertaken during the present project is the first study of this type for French fishing stations in Atlantic Canada. Further research and analysis of butchery on faunal assemblages from other sites in Newfoundland and on Atlantic

Canada's east coast would certainly help clarify the butchering behaviours of French fishermen and Anglo-Newfoundlander settlers.

Certain questions remain unanswered. For example, it would be interesting to determine if some of the pigs that were consumed at Dos de Cheval were obtained in trade with Anglo-Irish settlers. While it was beyond the scope of this project, DNA analysis or isotopic studies of the porcine faunal remains might determine whether the pigs were raised in France or Newfoundland. This information would help to better understand the trading relationships between French fishermen and Newfoundland settlers.

One of the challenges of working on faunal assemblages from a seasonal fishing station site is the fact that the sporadic and temporary occupation leaves poorly stratified faunal contexts. While bones were found in almost all events, only some, presented here, could be interpreted. The strata are also mixed, as showed by frequent mending of ceramic sherds from the upper 35 cm of deposits. This archaeological reality greatly constrained detection of cultural differences between French and Anglo-Newfoundlander fishermen.

This research lays a groundwork for future research on the zooarchaeology of fishing stations in Atlantic Canada. Dos de Cheval is only one fishing station, and surely the study of other sites could provide further insights into fishermen's diet. Geographical locations of fishing stations along the Petit Nord coast must have affected the species that were exploited. For example, the proximity of the Grey

Island from Dos de Cheval probably made it easier to hunt curlews during their fall migration. The abundance of salmon rivers in Hare Bay probably offered a welcome addition to the fishermen's diet. The excavation of other fishing station sites on the Petit Nord would give an even broader picture of the French, shore-based, migratory cod fishermen, including the specific foodways they developed while they were on shore.

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APPENDICES

Appendix 1

Archaeological contexts shown with their associated Event numbers with brief description of soil, inclusions and diagnostic artefacts.

Date Range	Context	Event	Description	Artefacts
Late 17th to Early 18th century	French	1067	Brown loam with stones and no pebbles.	REW Creamware, CEW, CSW, Brown Faience, pipe stems, nails.
	Midden or Processing Area?	1077	Large flat angular stones with pebbles and fine pebbles throughout.	CEW, REW Creamware, REW Pearlware, pipe stems, glass stemware, bottle glass or tumbler, nails.
	EF1	1083	Angular stones, pebbles and cobbles with a nail on the surface.	CEW, CSW, clear glass, drawer pull handle, Dutch 17th c. fleur-de-lys pipe stem, 18th c. John Stephens pipe stem, gun flint, lead casting waste.
	French	1081	Dark brown loam with large stones on surface.	CEW, CSW, Brown Faience, REW Creamware, pipe stem, hooks, nails.
	Processing midden?	1203	Large flat angular rocks in a brown loam sloping downwards all at the same angle matching the slope of the terrace.	CEW, CSW Brown Faience, REW Creamware, Blue-green glass, clear glass, pipe stems, fish hook fragments, nails.
	EF2			

Date Range	Context	Event	Description	Artefacts
c.1790-1815	Anglo-Newfoundlander	861	Beach gravel with a base matrix of brown soil and pockets of sod roots with some angular stones.	REW, CEW, Liguria, Normandy CSW, Brown Faience, Faience française, pipe stem, brass button, glass, nails.
		1005	Large angular stones with pebbles and fine pebbles throughout.	REW Creamware and Pearlware (Transfer print, painted, edged, blue willow) REW Creamware Nelson jug, CSW, CEW, pipe stems, pipe bowl ("CT"), light green bottle glass, fish hook, gun shot, nails.
		1282	Dark brown, loose, organic soil with a lot of pebbles and small angular stones.	REW Creamware, REW Pearlware blue shelledge, REW painted and transfer print, Normandy CSW, green bottle glass, window glass, flint, nails,
		1304	Dark brown clayish loam with roots, some pebbles and fine pebbles and few angular stones.	REW Creamware shelledge, REW transfer print, CSW, TGEW, pipe stems, bottle glass, fish hooks, nails
	Processing Area	816	Fine dark brown soil with a lot of gravel, continuation of 809.	REW Creamware and Pearlware Painted, TGEW, CEW, CSW, bottle and window glass, lead dabber, nails.
	A-N	1009	Pebbles and fine pebbles with fragments of fish bone on the surface.	REW Creamware and Pearlware, REW Creamware Nelson jug, TGEW Brown Faience, CEW, CSW, pipe stems, MORGAN pipe stem, cod dabber, green bottle glass, nails.
		1284	Brown loam with pebbles, shale and large angular stones.	REW blue transfer print, REW Creamware Nelson jug, REW shelledge, decorated pipe bowl, window glass, bottle glass, fish hook, nails.
		1286	Very pebbly (i.e. beach) with little soil, some small angular stones.	REW, REW Jackfield?, lead waste, CSW, pipe stem, clear bottle glass, nails.
		1306	Fine pebbles, pebbles and some angular stones in a dark brown loam with fish bones on the surface.	REW, TGEW, CEW, CSW, pipe stems, bottle glass, nails

Date Range	Context	Event	Description	Artefacts
19th century (Post-1815)	French	800	Heavy sod of grasses, alexanders and nettles in Area C.	CEW, CSW, REW, Faience, glass, buttons, nails, etc.
		1001	Medium brown loamy soil with pebbles and fine pebbles throughout. Nails and artefacts appearing on the surface.	REW Pearlware, REW Creamware, yellowware, CEW, Normandy CSW, Brown Faience, buttons, kettle fragment, pipe stems, cod dabber, nails, etc.
	Working and Processing Area? (Area C) **LF1**	1302	Brown loam with lots of roots and some small and large pebbles.	REW, CSW, CEW, TGEW, Faience Brune, pipe stems, bottle glass, lead cast waste, nails.
	French	1052	Organic, brown clayish soil with some gravel, small rocks (10cm or less) and mortar.	Coarse yellow brick fragments, CEW, REW, large quantity of rather small nails.
	Bread oven use context (Area A)	1060	Charcoal.	REW, pipe bowl fragments.
	LF2	1068	Greyish-brown soil with charcoal and spots of yellow clay.	Yellow and red brick fragments, pipe stem fragment, CEW, bone button, nails.
		1072	Greyish gravely loam, with charcoal, lenses of gritty orangey-red loam with charcoal.	Coarse red tile fragments, glass button, fish hook, nails.

Appendix 2

Butchery marks on pig and caprine elements.

BUTCHERY MARKS COLOUR CODE

S (Green) = Scrape

C (Blue) = Cut

SH (Red) = Shear

CH (Black) = Chop

SW (Purple) = Saw mark

The following drawings are only a selection of the most interesting cut marks recorded on elements at Dos de Cheval (EfAx-09). Pig drawings are modified from Pales and Lambert (1971); Caprine drawings are modified from Popkin (2005), with permission.

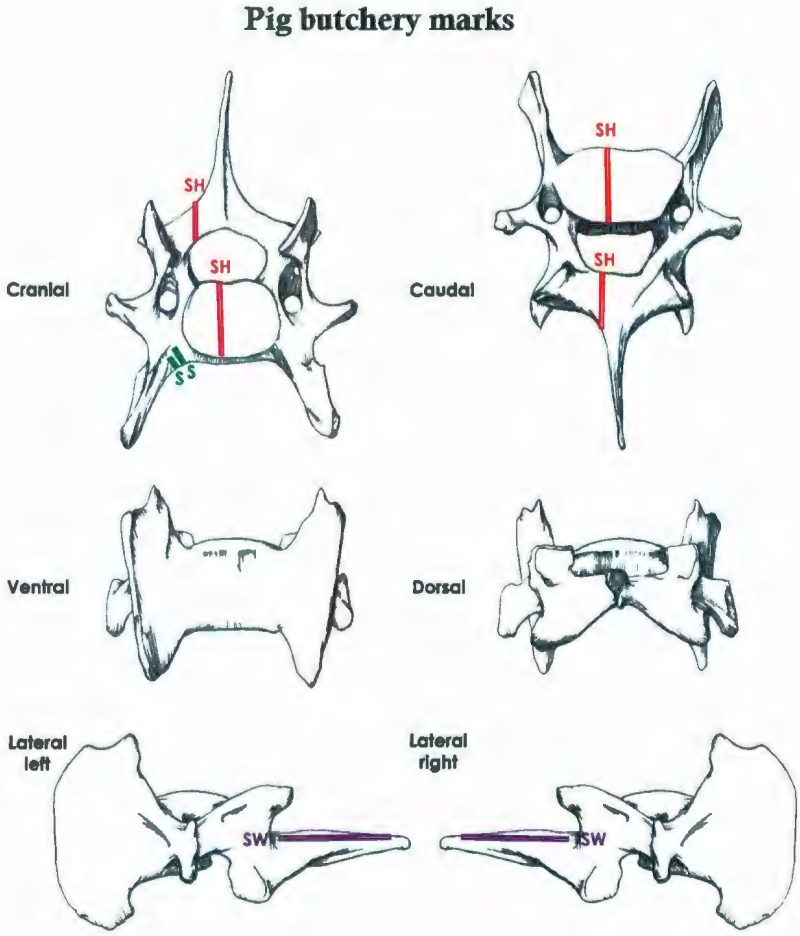

Figure 27. Butchery marks on Pig cervical vertebra, Earlier French Period, Late 17th to Early 18th century (EF1), EfAx-09.

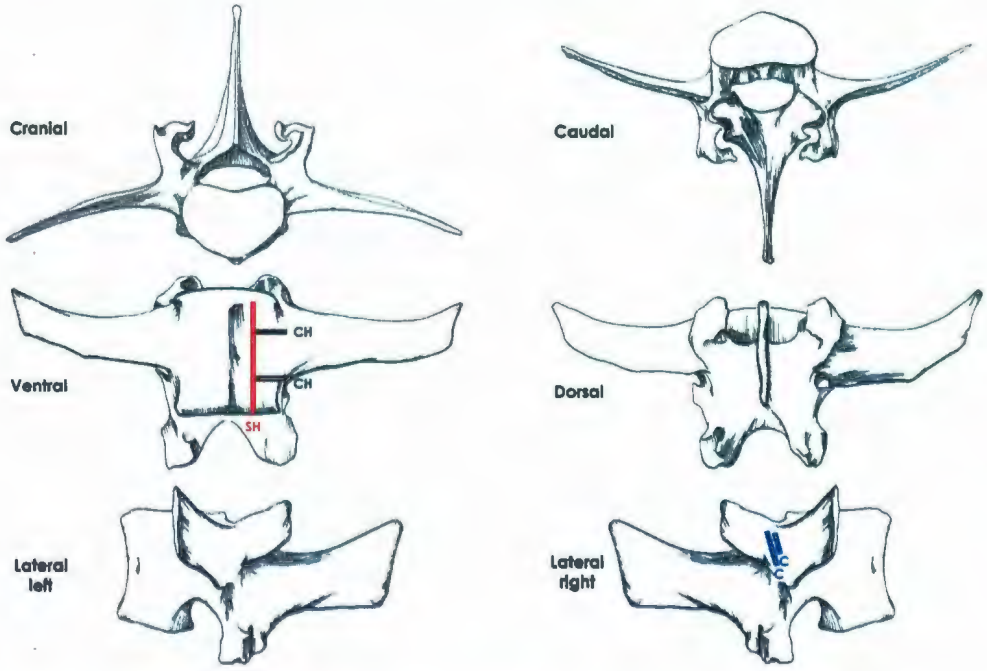

Figure 28. Butchery marks on Pig lumbar vertebra, Earlier French Period, Late 17th to Early 18th century (EF1), EfAx-09.

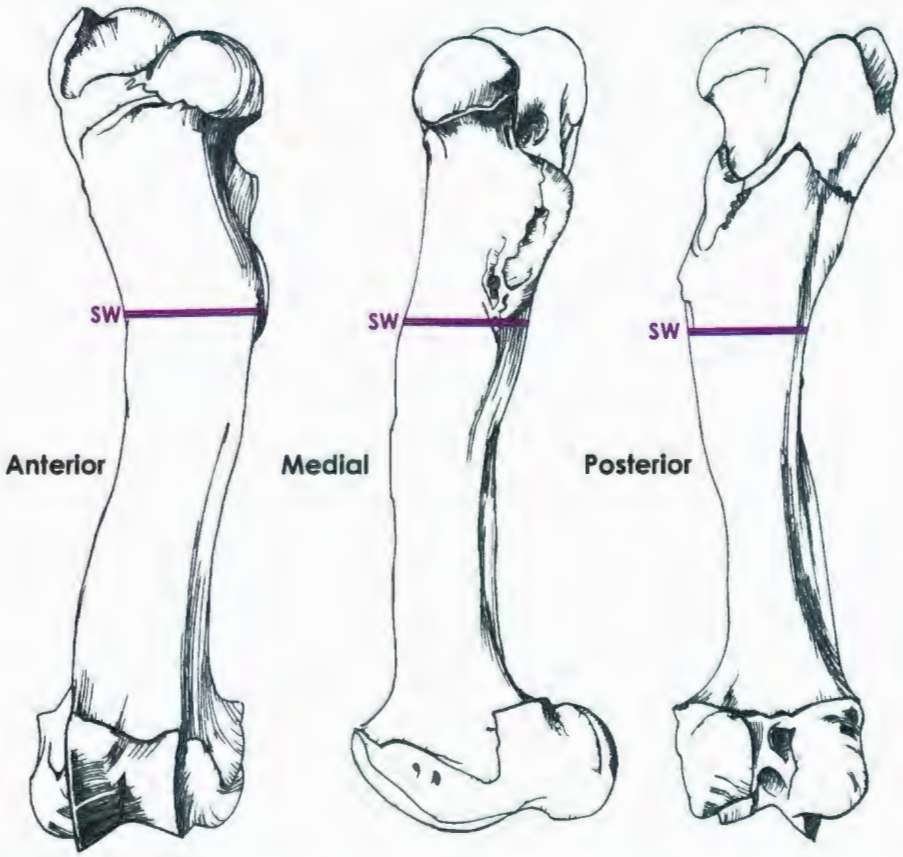

Figure 29. Butchery marks on Pig femur, Earlier French Period, Late 17th to Early 18th century (EF1), EfAx-09.

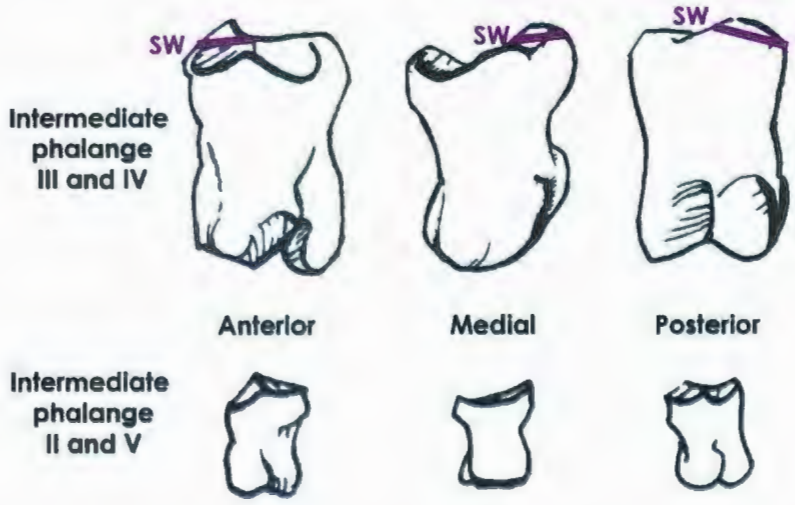

Figure 30. Butchery marks on Pig intermediate phalanges, Earlier French Period, Late 17th to Early 18th century (EF1), EfAx-09.

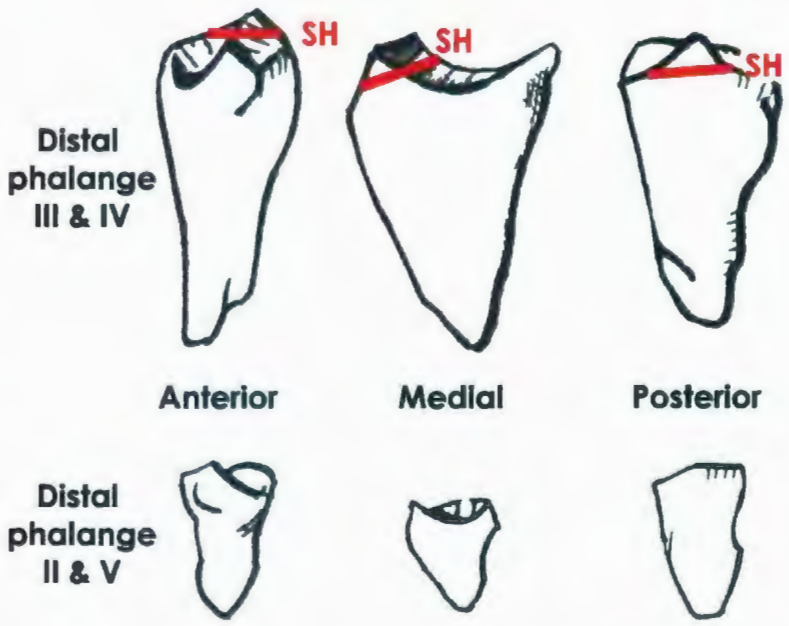

Figure 31. Butchery marks on Pig distal phalanges, Earlier French Period, Late 17th to Early 18th century (EF1), EfAx-09.

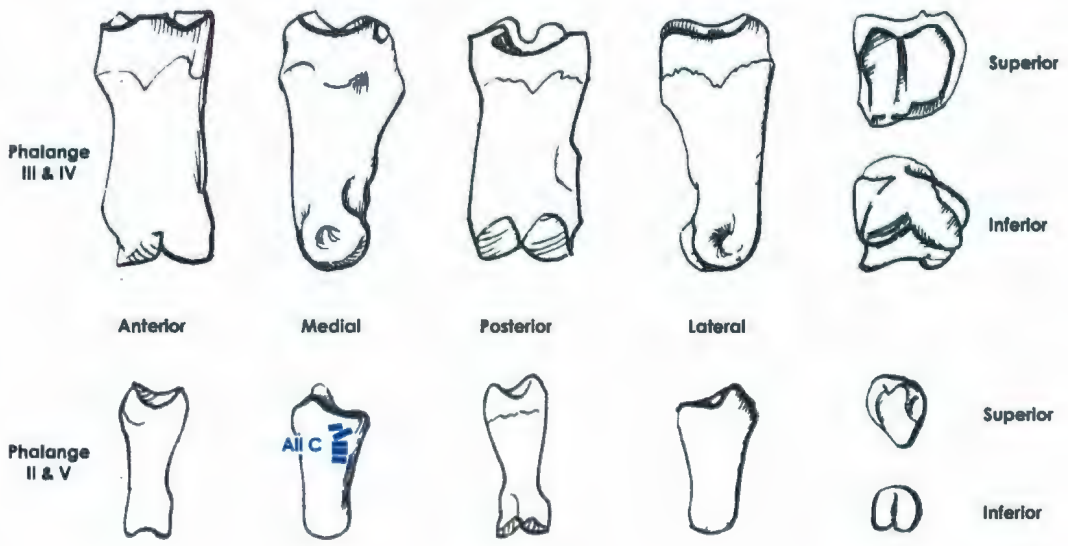

Figure 32. Butchery marks on Pig proximal phalanges, Earlier French Period, Late 17th to Early 18th century (EF2), EfAx-09.

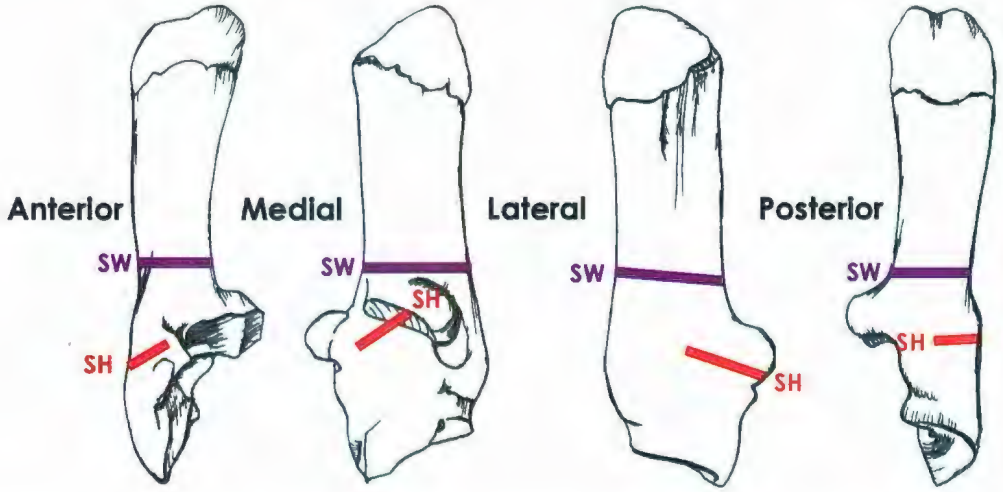

Figure 33. Butchery marks on Pig calcaneus, Earlier French Period, Mid 18th century, under burnt structure (Feature 1248) (EF3), EfAx-09.

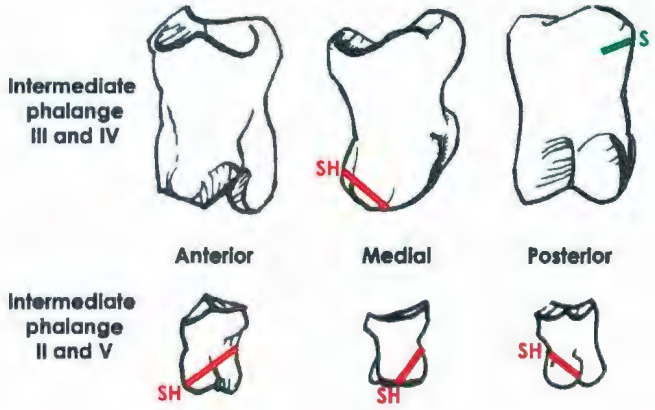

Figure 34. Butchery marks on Pig intermediate phalanges, Earlier French Period, Mid 18th century, under burnt structure (Feature 1248) (EF3), EfAx-09.

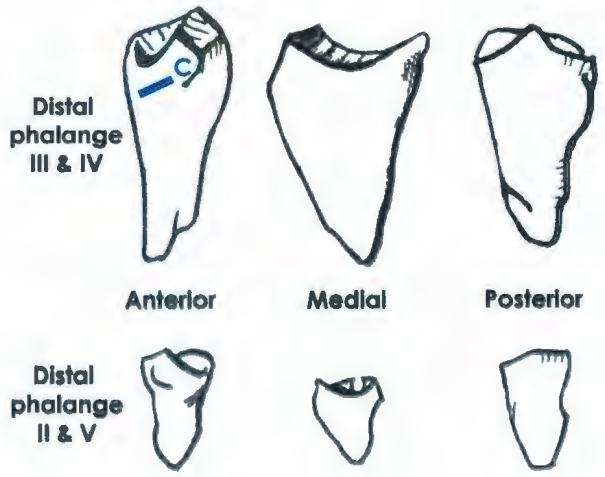

Figure 35. Butchery marks on Pig distal phalanges, Earlier French Period, Mid 18th century, under burnt structure (Feature 1248) (EF3), EfAx-09.

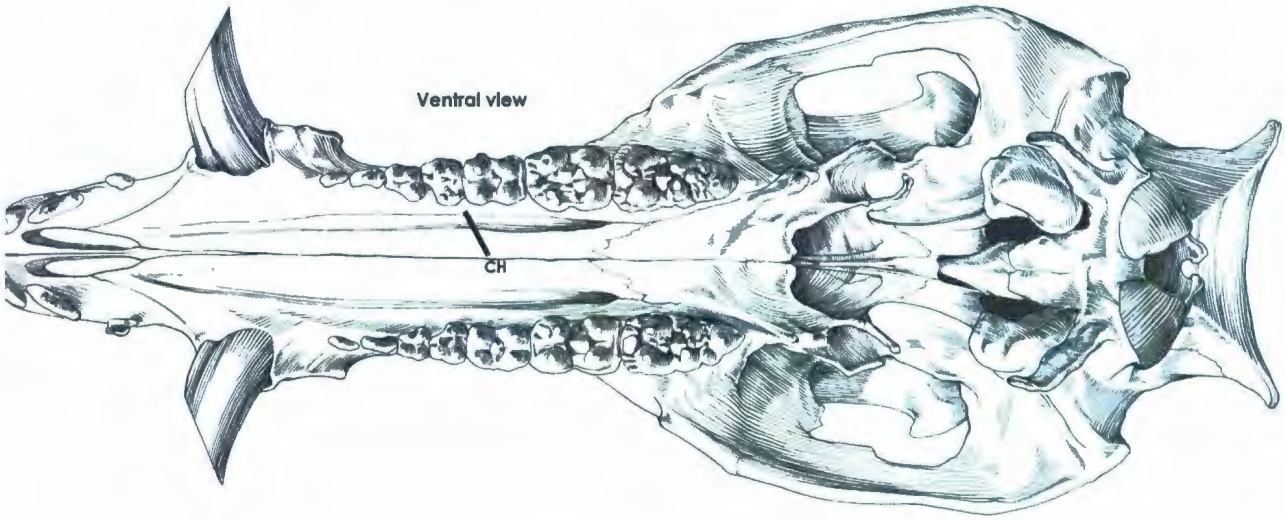

Figure 36. Butchery marks on Pig skull, Earlier French Period, Mid 18th century (EF4), EfAx-09.

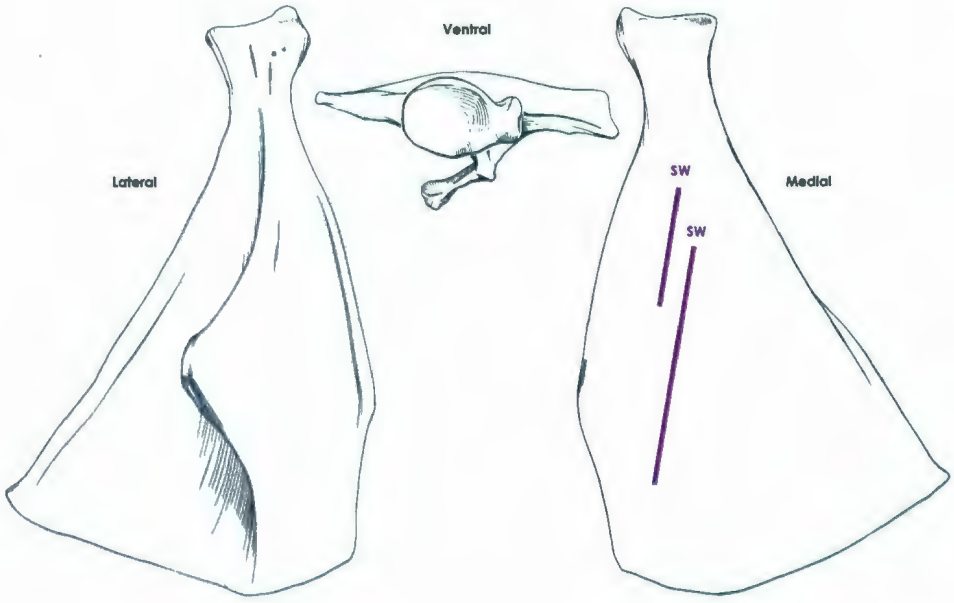

Figure 37. Butchery marks on Pig scapula, Earlier French Period, Mid 18th century (EF4), EfAx-09.

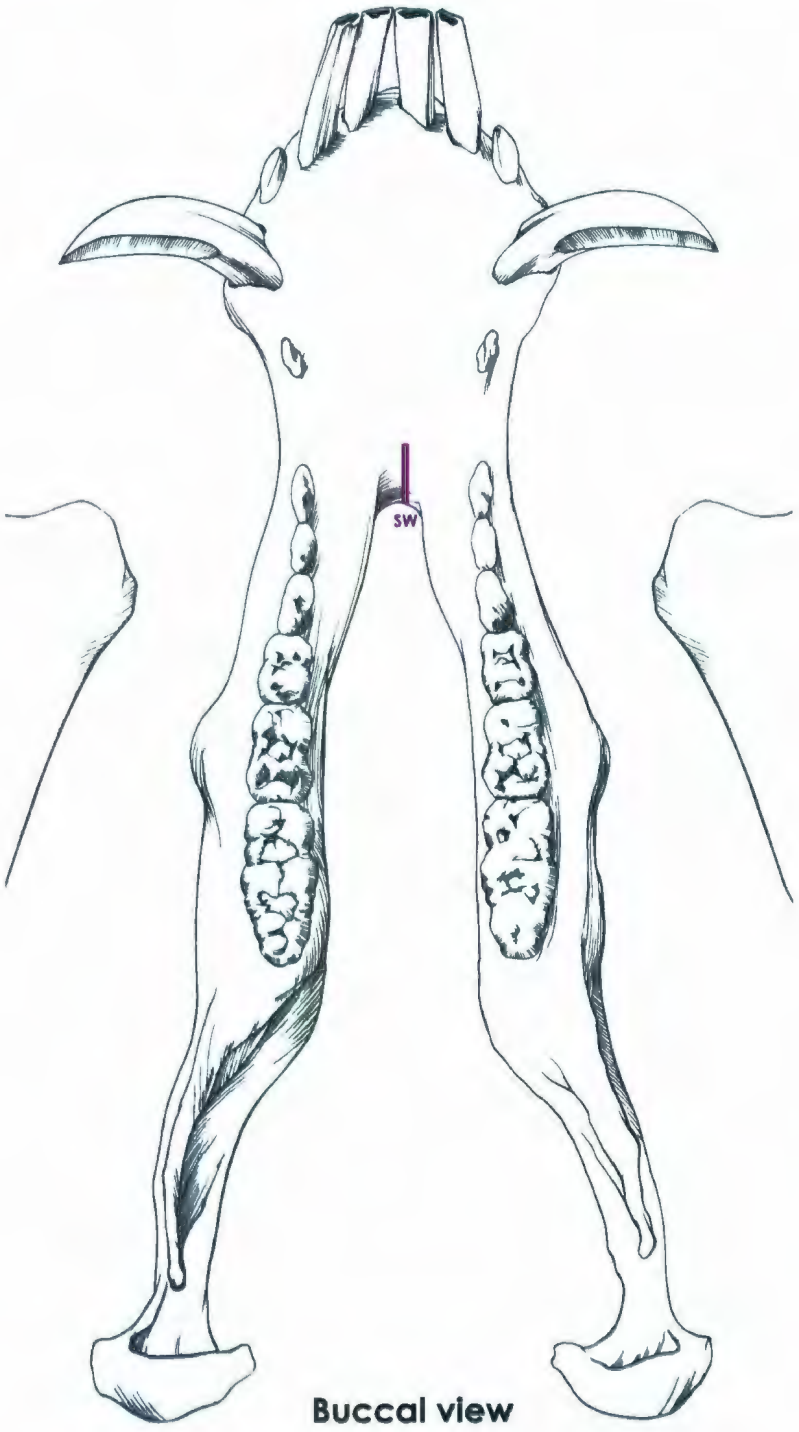

Figure 38. Butchery marks on Pig mandible, Earlier French Period, Mid 18th century (EF4), EfAx-09.

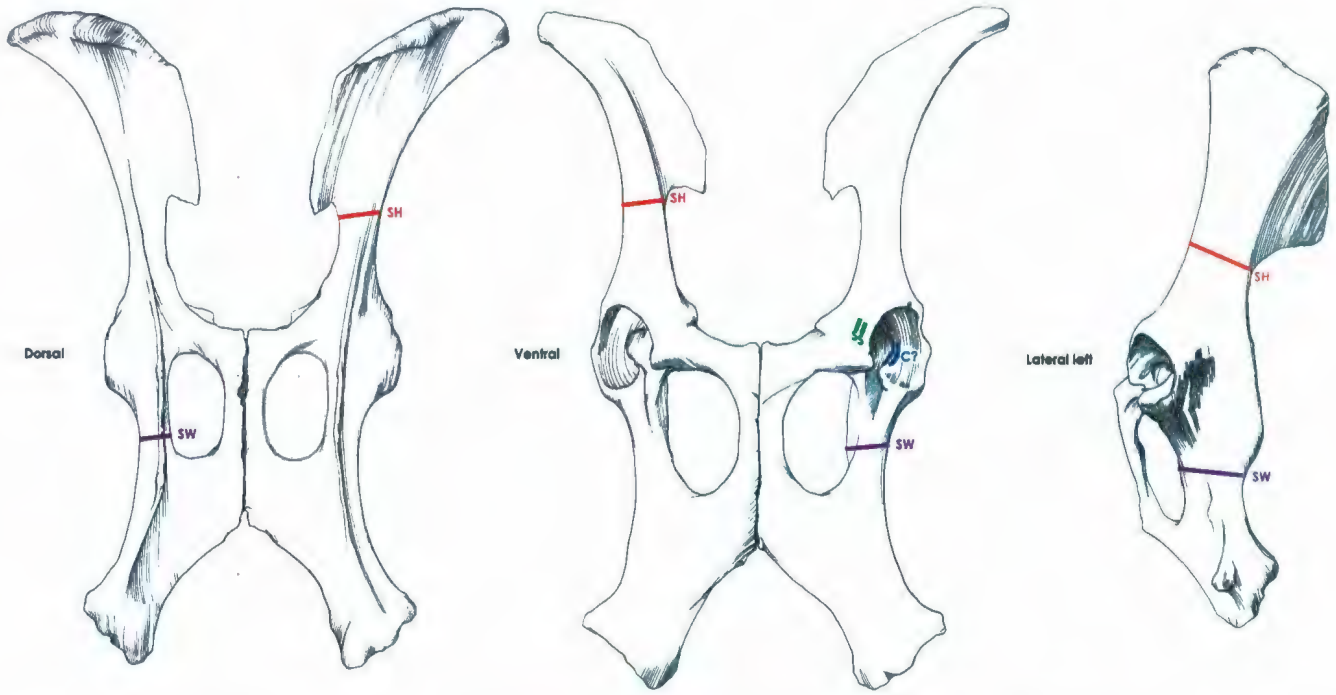

Figure 39. Butchery marks on Pig innominate, Earlier French Period, Mid 18th century (EF4), EfAx-09.

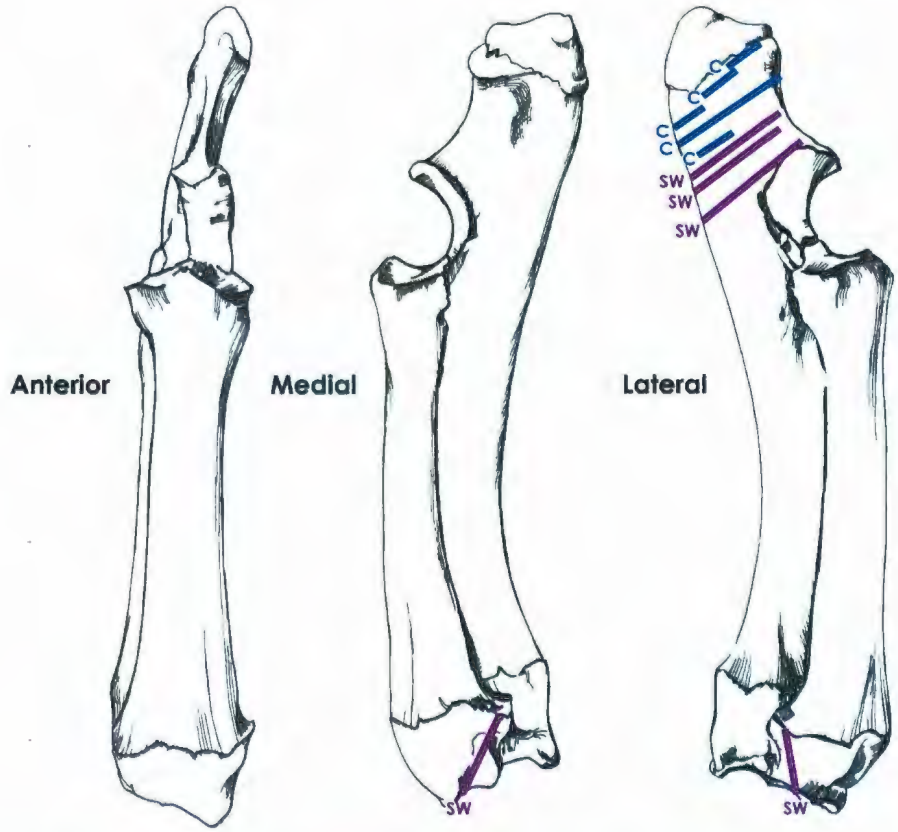

Figure 40. Butchery marks on Pig radius-ulna, Earlier French Period, Mid 18th century (EF4), EfAx-09.

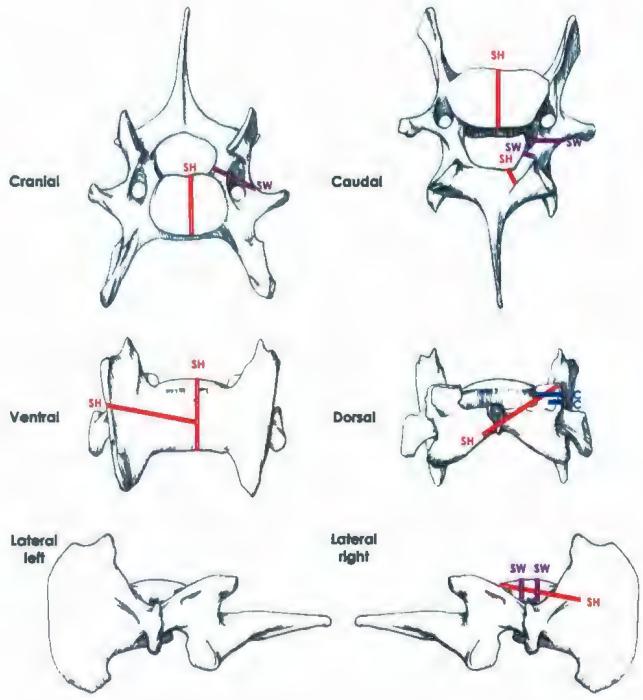

Figure 41. Butchery marks on Pig cervical vertebra, Earlier French Period, Late 18th century (EF5), EfAx-09.

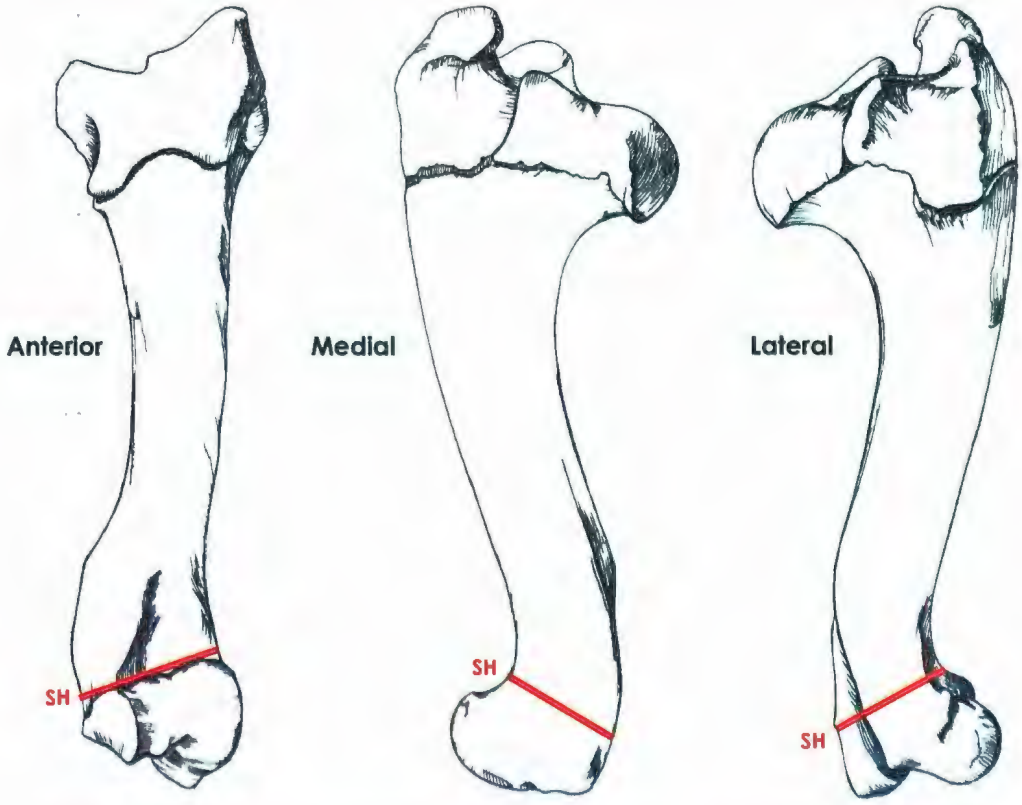

Figure 42. Butchery marks on Pig humerus, Earlier French Period, Late 18th century (EF5), EfAx-09.

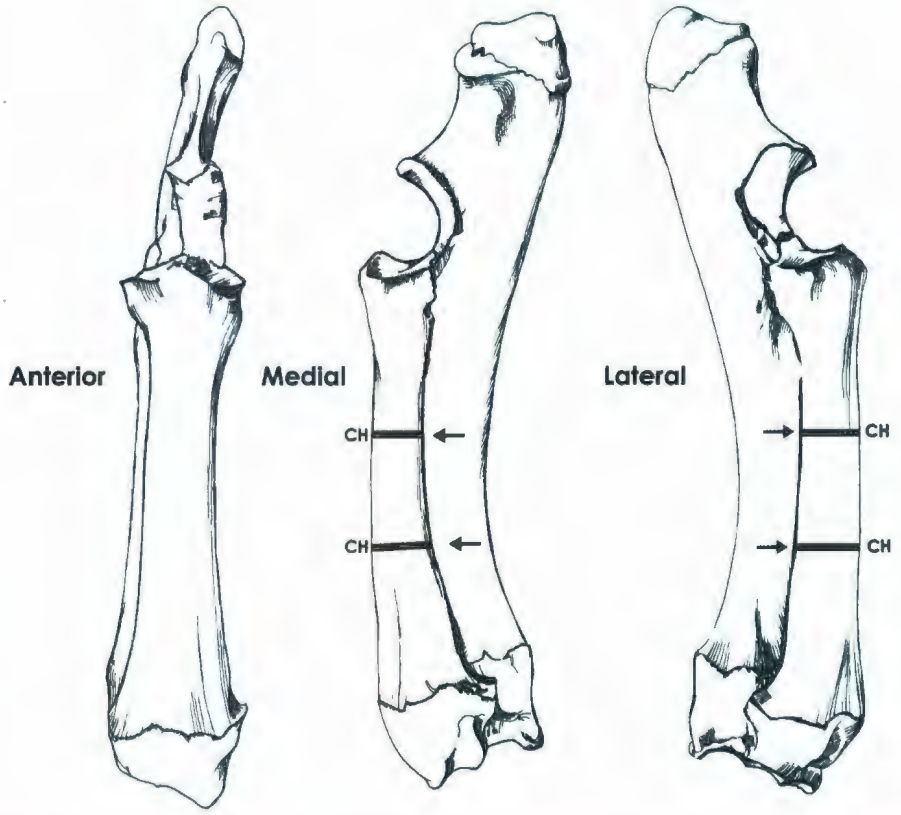

Figure 43. Butchery marks on Pig radius-ulna, Earlier French Period, Late 18th century (EF5), EfAx-09.

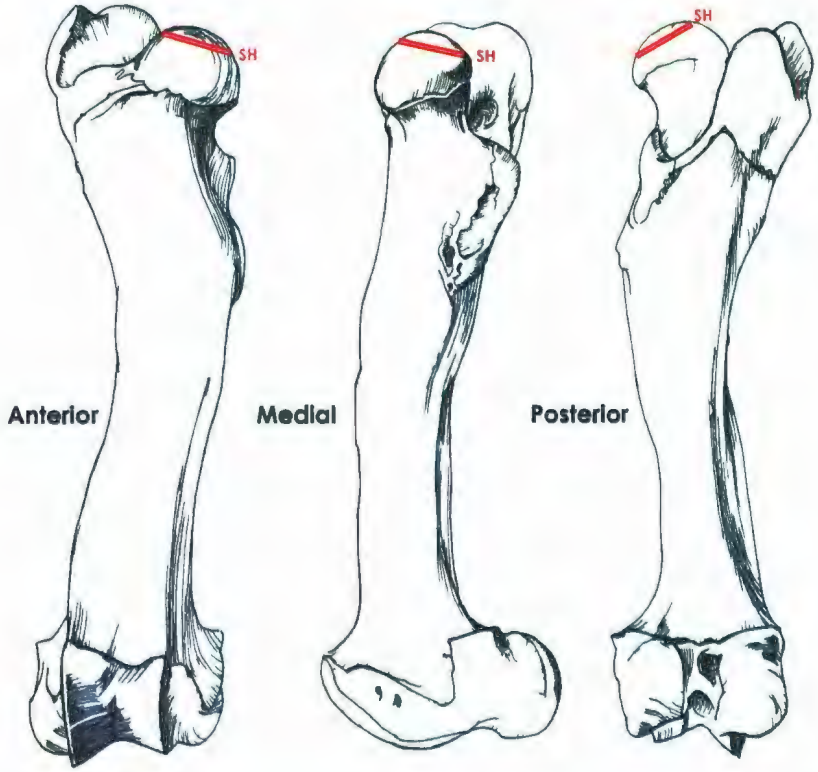

Figure 44. Butchery marks on Pig femur, Earlier French Period, Late 18th century (EF5), EfAx-09.

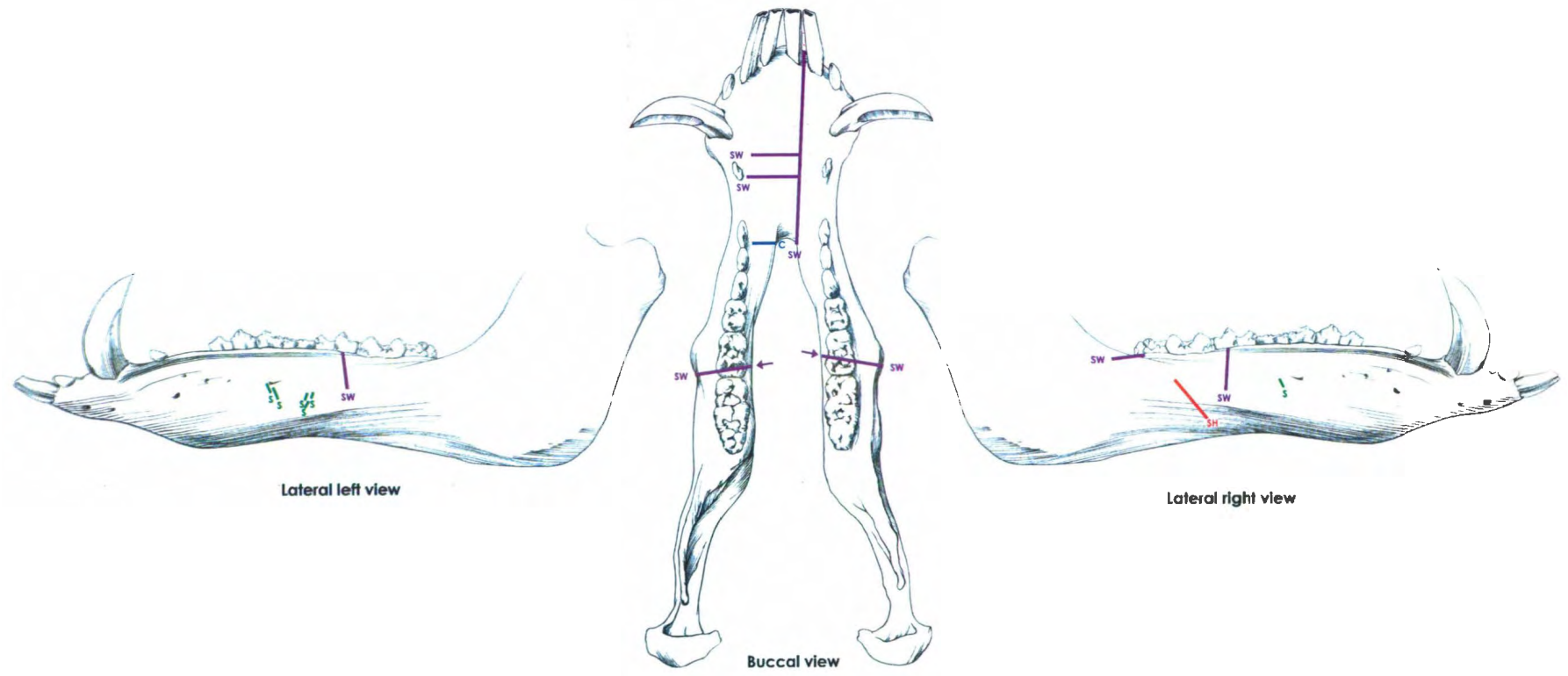

Figure 45. Butchery marks on Pig mandible, Anglo-Newfoundlander Period, c.1790-1815 (A-N), EfAx-09.

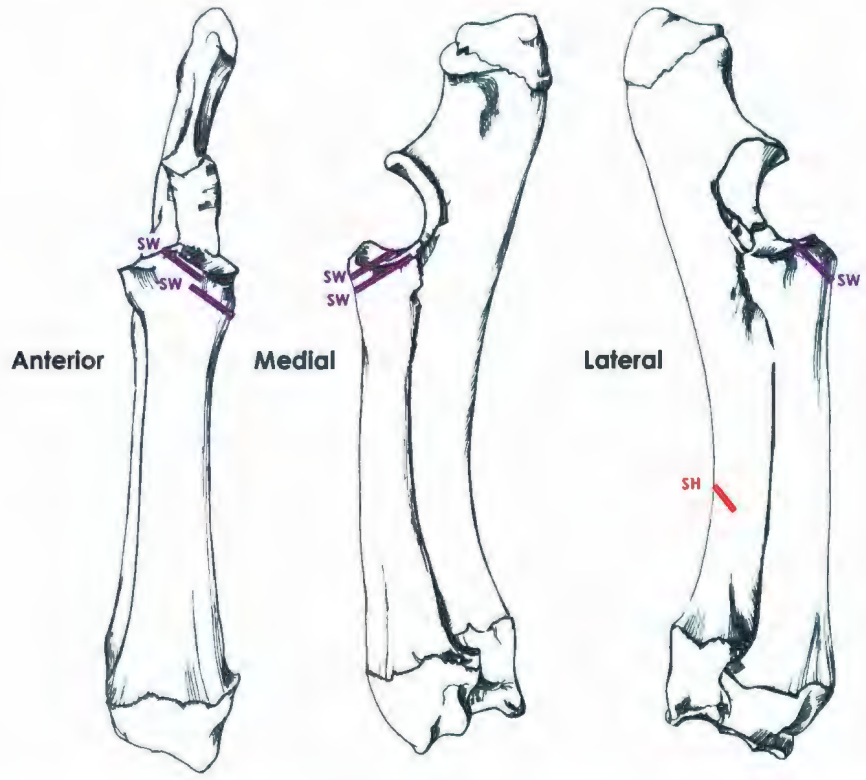

Figure 46. Butchery marks on Pig radius-ulna, Anglo-Newfoundlander Period, c.1790-1815 (A-N), EfAx-09.

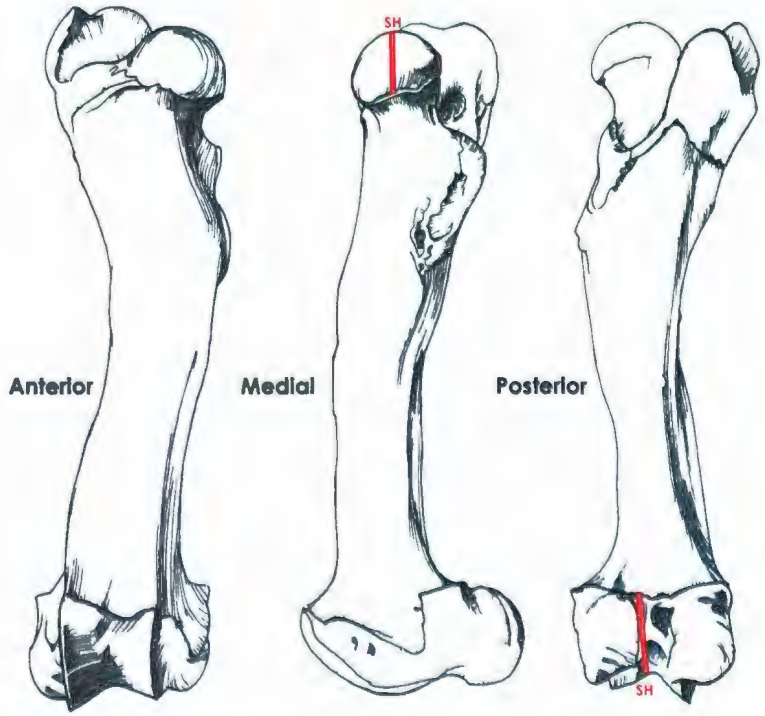

Figure 47. Butchery marks on Pig femur, Anglo-Newfoundlander Period, c.1790-1815 (A-N), EfAx-09.

Caprine Butchery Marks

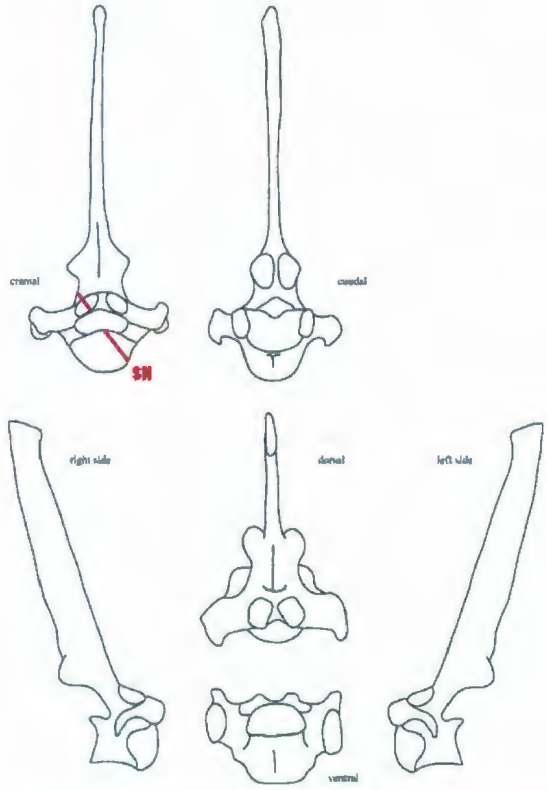

Figure 50. Butchery marks on Sheep/Goat thoracic vertebra, Earlier French Period, Late 17th to Early 18th century (EF1), EfAx-09.

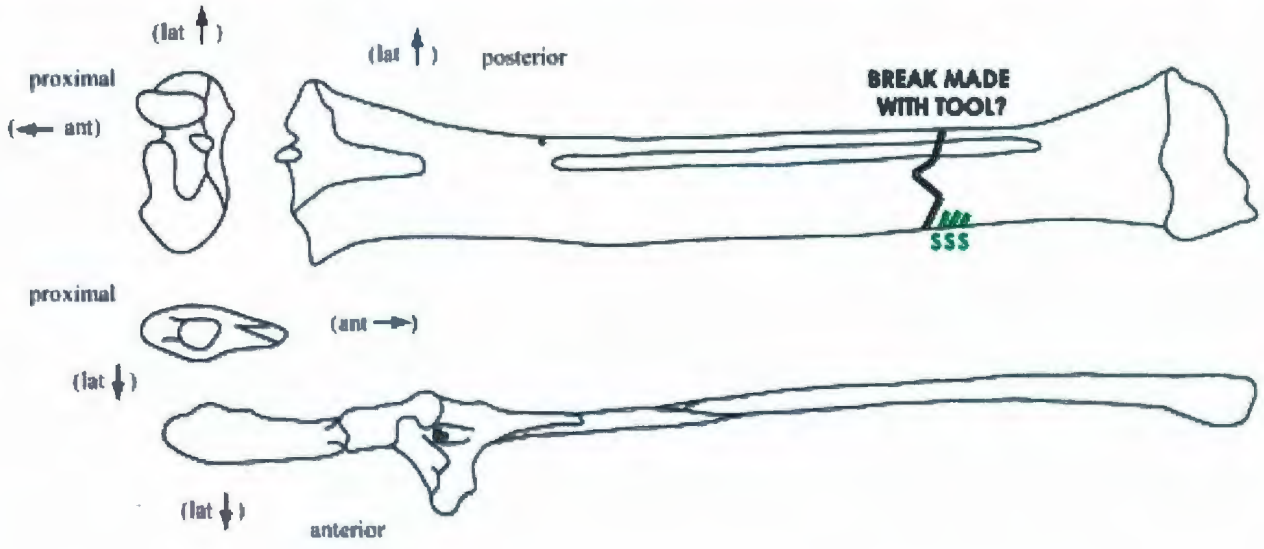

Figure 51. Butchery marks on Sheep/Goat ulna-radius, Earlier French Period, Late 17th to Early 18th century (EF1), EfAx-09.

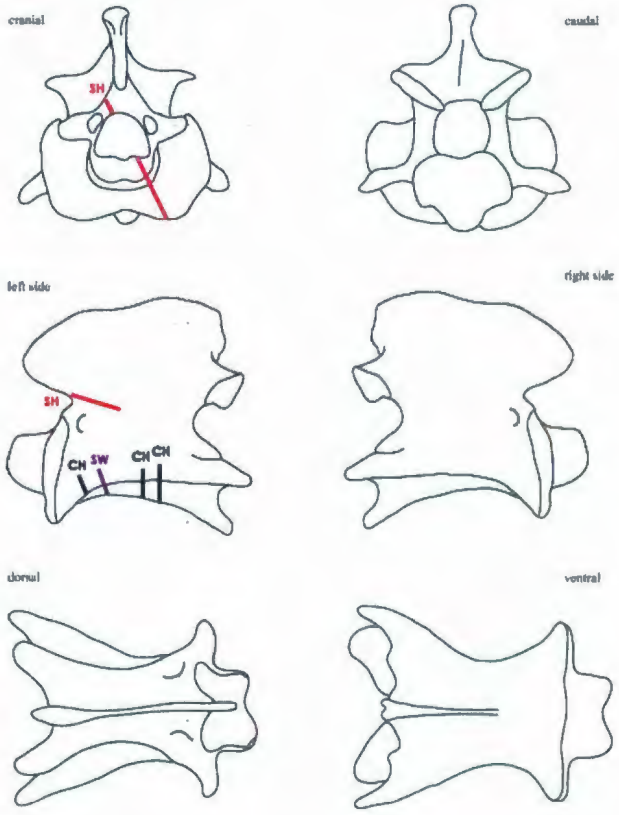

Figure 52. Butchery marks on Sheep/Goat axis vertebra, Earlier French Period, Late 17th to Early 18th century (EF2), EfAx-09.

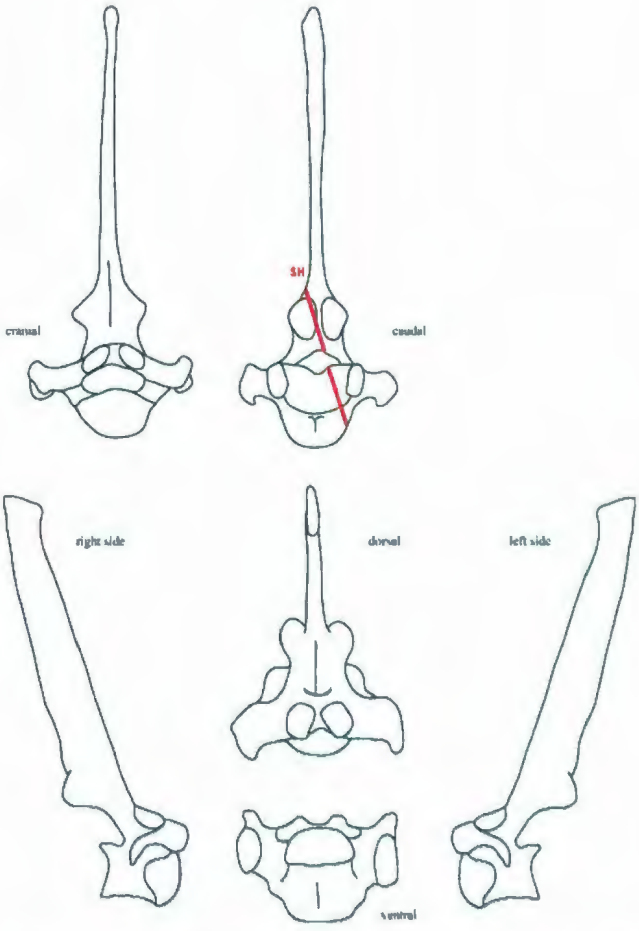

Figure 53. Butchery marks on Sheep/Goat thoracic vertebra, Earlier French Period, Late 17th to Early 18th century (EF2), EfAx-09.

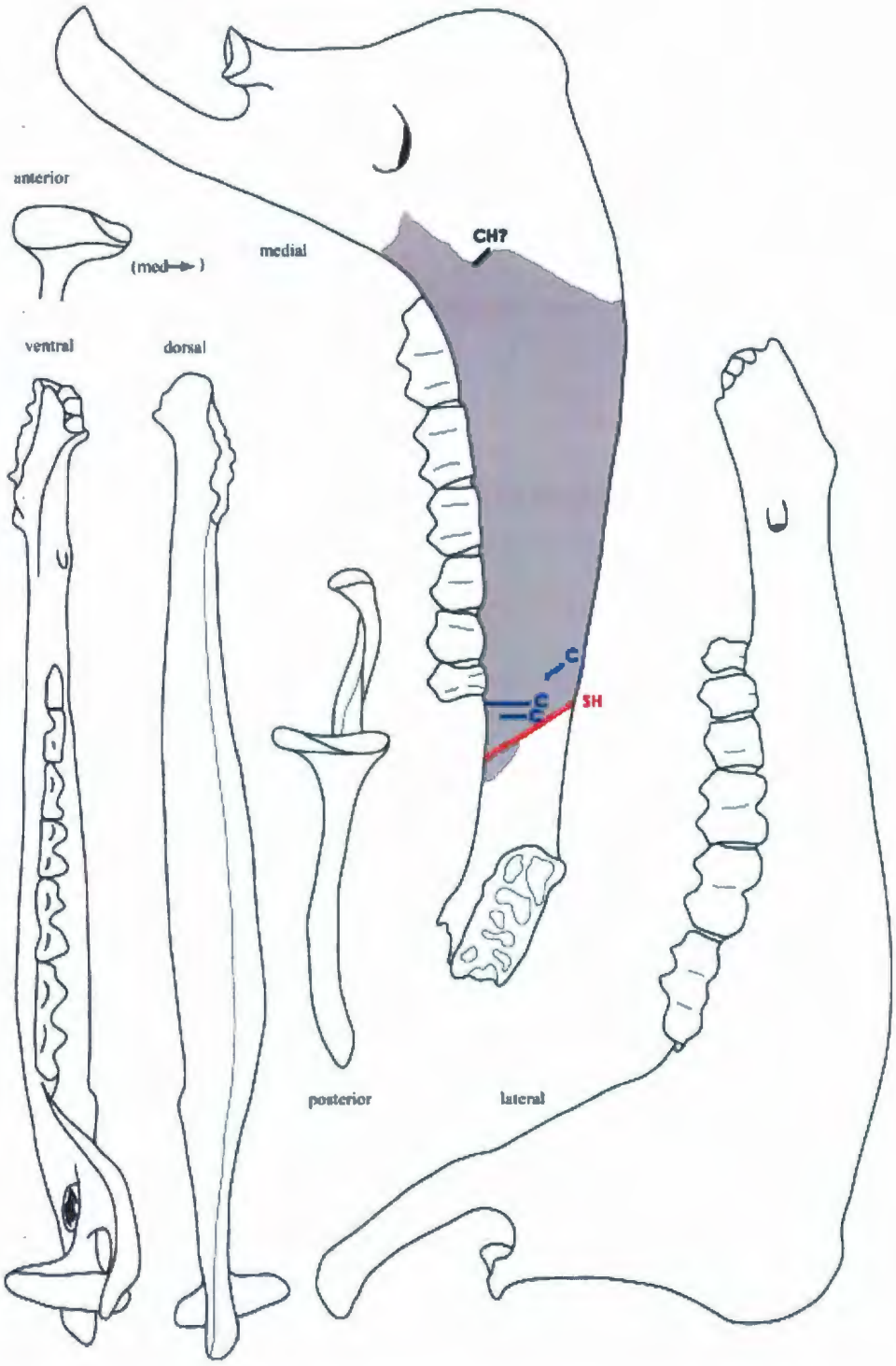

Figure 54. Butchery marks on Sheep/Goat mandible, Earlier French Period, Mid-18th century (EF4), EfAx-09. Part present shaded in gray.

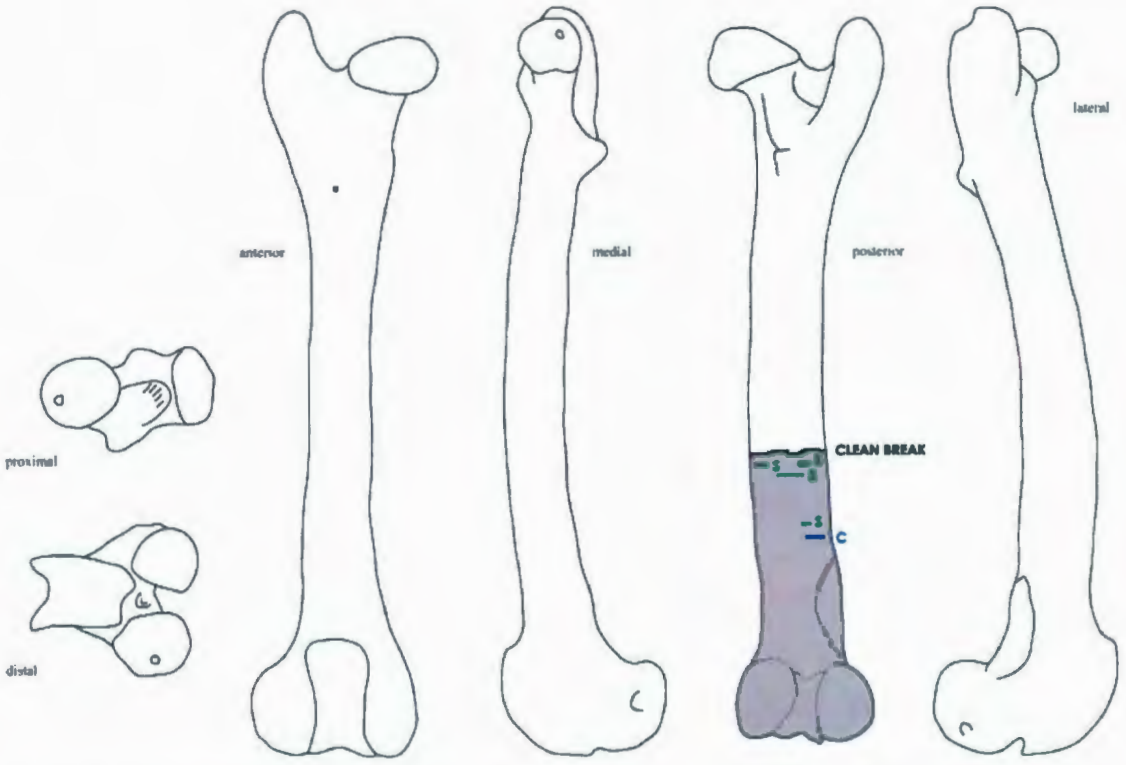

Figure 55. Butchery marks on Sheep/Goat femur, Earlier French Period, Mid-18th century (EF4), EfAx-09. Part present shaded in gray.

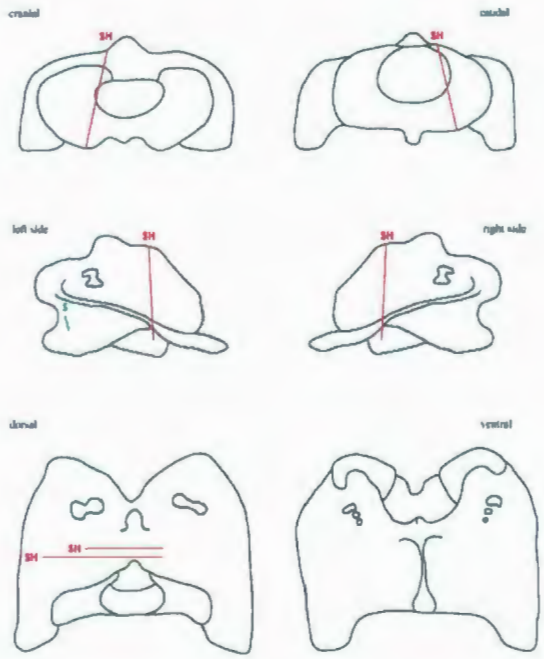

Figure 56. Butchery marks on Sheep/Goat atlas vertebra, Earlier French Period, Late 18th Century (EF5), EfAx-09.

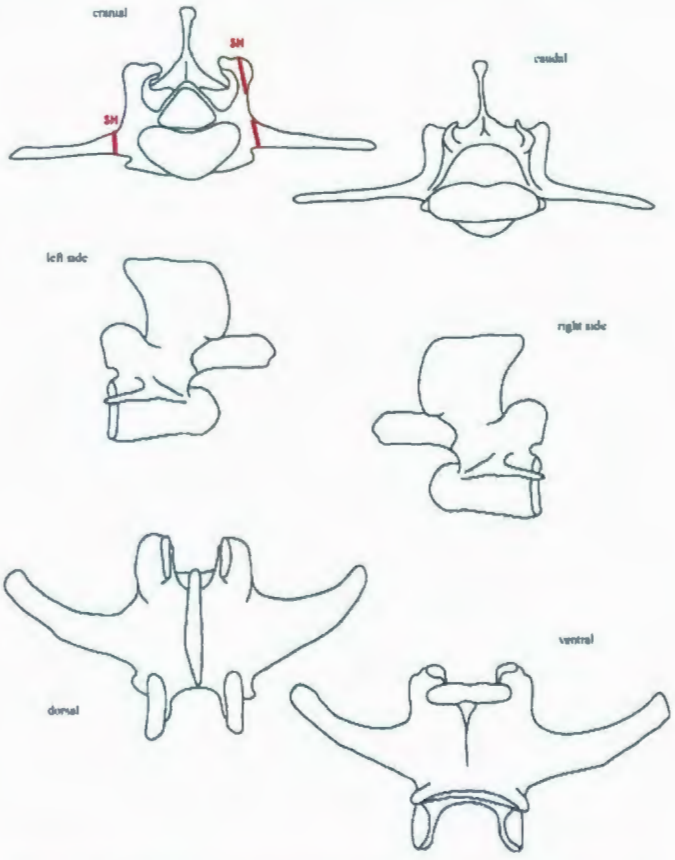

Figure 57. Butchery marks on Sheep/Goat lumbar vertebra, Anglo-Newfoundlander Period (A-N), EfAx-09.

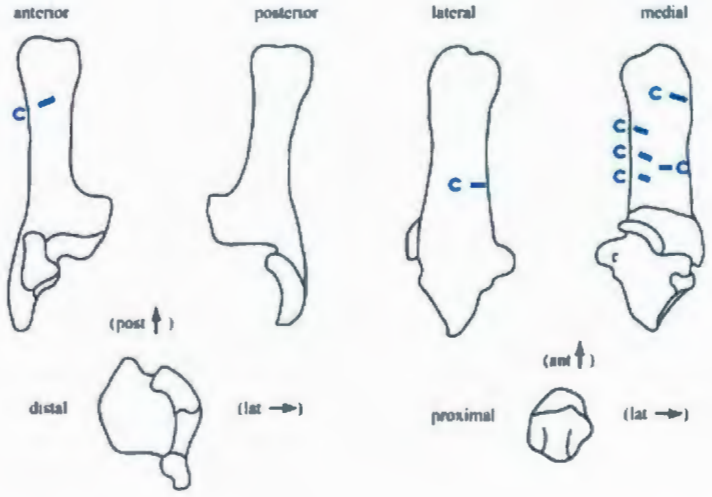

Figure 58. Butchery marks on Sheep/Goat calcaneus, Anglo-Newfoundlander Period (A-N), EfAx-09.

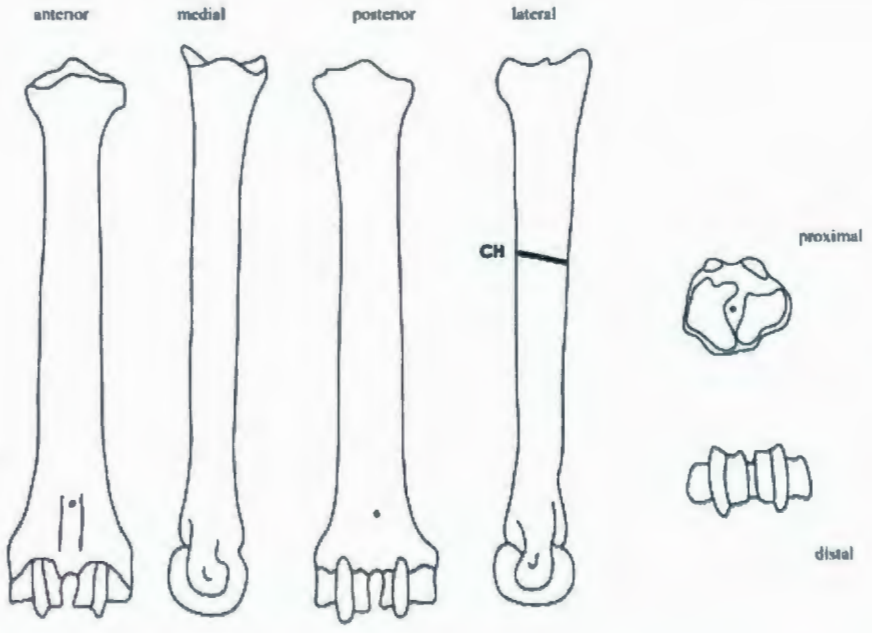

Figure 59. Butchery marks on Sheep/Goat metatarsal, Anglo-Newfoundlander Period (A-N), EfAx-09.

Appendix 3

Tables of ageing data for mandibles, maxillae and long bone fragments.

CODES

BONE

CAL = Calcaneus

FEM = Femur

FIB = Fibula

HUM = Humerus

MAN = Mandible

MAX = Maxilla

MC2 = Second metacarpal

MC3 = Third metacarpal

MC4 = Fourth metacarpal

MC5 = Fifth metacarpal

MT2 = Second metatarsal

MT3 = Third metatarsal

MTP = Metapodial

PH1 = Proximal phalange

PH2 = Intermediate phalange

PH3 = Distal phalange

RAD = Radius

SCP = Scapula

TIB = Tibia

ULN = Ulna

END

D+E = Distal end + detached epiphysis

DE = Distal detached epiphysis

DIS = Distal end

F = Fragment

P+E = Proximal end + detached epiphysis

PE = Proximal detached epiphysis

PRO = Proximal end

W + DE = Whole bone + distal detached epiphysis

W + PE = Whole bone + proximal detached epiphysis

W = Whole bone

W+E = Whole bone + detached epiphysis

FUSION

U = Unfused

I = Intermediate (fusing)

F = Fused

Earlier French Period, Late 17th to Early 18th Century (EF1)

ID #	Unit	Event	Bone	End	Fusion	Estimated Age in Months	Teeth Wear Stage, based on Grant (1982)[1]									
							I1 (i1)	I2 (i2)	I3 (i3)	C (dc)	P2 (dp2)	P3 (dp3)	P4 (dp4)	M1	M2	M3
208-1	W38S104	1081	MAX	F	-	19-23										U
208-2	W38S104	1081	FEM	DE	U	<42										
208-3	W38S104	1081	PH2	W	I	~12										
217-1	W38S104	1203	PH3	W	F	>12										
217-2	W38S104	1203	TIB	DIS	U	<24										
219-1	W38S104	1203	HUM	DIS	U	<18										

[1] Tooth between parentheses are deciduous.
i1, i2, i3 = deciduous incisors; dc = deciduous canine; dp2, dp3, dp4 = deciduous premolars; I1, I2, I3 = permanent incisors; C = permanent canine; P2, P3, P4 = permanent premolars; M1, M2, M3 = molars.

Earlier French Period, Late 17th to Early 18th Century (EF2)

ID #	Unit	Event	Bone	End	Fusion	Estimated Age in Months	Teeth Wear Stage, based on Grant (1982)[1]									
							I1 (i1)	I2 (i2)	I3 (i3)	C (dc)	P2 (dp2)	P3 (dp3)	P4 (dp4)	M1	M2	M3
210-1	W37S103	1083	TIB	PE	U	<42										

[1] Tooth between parentheses are deciduous.
i1, i2, i3 = deciduous incisors; dc = deciduous canine; dp2, dp3, dp4 = deciduous premolars; I1, I2, I3 = permanent incisors; C = permanent canine; P2, P3, P4 = permanent premolars; M1, M2, M3 = molars.

Earlier French Period, Mid 18th Century, Midden Under Burnt Structure (EF3)

ID #	Unit	Event	Bone	End	Fusion	Estimated Age in Months	Teeth Wear Stage, based on Grant (1982)[1]									
							I1 (i1)	I2 (i2)	I3 (i3)	C (dc)	P2 (dp2)	P3 (dp3)	P4 (dp4)	M1	M2	M3
148-1	W32S103	1037	PH2	W	F	>12										
152-1	W33S103	1041	MC3	DIS	U	<24										
152-2	W33S103	1041	PH3	W	F	>12										
153-1	W32S103	1041	PH1	PE	U	<24										
186-1	W31S103	1061	MAN	F	-	19-23						b	b	f		
186-2	W31S103	1061	PH1	W	U	<24										
186-3	W31S103	1061	PH1	W	U	<24										
186-4	W31S103	1061	PH2	F	F	>12										
187-1	W31S103	1061	PH2	W	F	>12										
313-1	W31S103	1246	PH2	W	I	~12										
313-2	W31S103	1246	PH3	W	F	>12										
345-1	W32S102	1300	PH1	W	U	<24										
345-2	W32S102	1300	PH1	W	F	>12										
345-3	W32S102	1300	PH2	W	F	>12										
369-1	W31S102	1246	PH1	W+E	U	<24										
370-1	W32S101	1246	PH1	W	U	<24										
370-2	W32S101	1246	PH1	W	U	<24										

370-3	W32S101	1246	PH2	W	F	>12										
370-4	W32S101	1246	PH2	W	F	>12										
370-5	W32S101	1246	PH3	W	F	>12										
371-1	W32S102	1246	PH1	PE	U	<24										
371-2	W32S102	1246	PH1	W	U	<24										
371-3	W32S102	1246	PH2	W	F	>12										
372-1	W31S101	1246	PH1	W	I	~24										
372-2	W31S101	1246	PH1	PE	U	<24										
372-3	W31S101	1246	PH2	W	U	<24										
372-4	W31S101	1246	ULN	PE	U	<42										
373-1	W31S101	1246	PH1	W	U	<24										
373-2	W31S101	1246	PH1	W	F	>12										
373-3	W31S101	1246	PH1	W	U	<24										
373-4	W31S101	1246	PH2	W	F	>12										
373-5	W31S101	1246	PH3	W	F	>12										
375-1	W36S105	1246	PH1	W	U	<24										
375-2	W36S105	1246	PH1	W+PE	U	<24										
375-3	W36S105	1246	PH1	W+PE	U	<24										
LS328	W32 S100	869	PH2	W	F	>12										
LS334	W32 S100	869	PH2	W	F	>12										
LS337	W32 S100	869	PH3	W	F	>12										

[1] Tooth between parentheses are deciduous.
i1, i2, i3 = deciduous incisors; dc = deciduous canine; dp2, dp3, dp4 = deciduous premolars; I1, I2, I3 = permanent incisors; C = permanent canine; P2, P3, P4 = permanent premolars; M1, M2, M3 = molars.

Earlier French Period, Mid 18th Century, Midden-Type Deposit (EF4)

ID #	Unit	Event	Bone	End	Fusion	Estimated Age in Months	Teeth Wear Stage, based on Grant (1982)[1]									
							I1 (i1)	I2 (i2)	I3 (i3)	C (dc)	P2 (dp2)	P3 (dp3)	P4 (dp4)	M1	M2	M3
176-1	W38S104	1059	MAX	F	-	16-20							a	e	b	V
178-1	W38S103	1059	FEM	PRO	U	<42										
178-2	W38S103	1059	MTP	PRO	U	<24										
178-3	W38S103	1059	PH2	W	I	~12										
178-4	W38S103	1059	RAD	DE	U	<42										
179-1	W38S103	1059	MC2	W	U	<24										
179-2	W38S103	1059	MC3	W+DE	U	<24										
179-3	W38S103	1059	MC4	W	U	<24										
179-4	W38S103	1059	MT2	W	U	<24										
179-5	W38S103	1059	PH1	W	U	<24										
179-6	W38S103	1059	RAD	DIS	U	<42										
180-1	W38S104	1059	MAN	F	-	6-12			V	1/2	(b)					
180-2	W38S104	1059	MC5	W	U	<24										
180-3	W38S104	1059	MTP	PRO	U	<24										
180-4	W38S104	1059	RAD	DE	U	<42										
183-1	W38S103	1059	CAL	W	U	<30										
183-2	W38S103	1059	PH1	W	I	~24										
184-1	W38S103	1059	MAX	F	-	19-23						b	b	g	d	1/2
185-1	W39S103	1059	ULN	PRO	U	<42										
189-1	W37S103	1063	TIB	DIS	I	~24										

[1] Tooth between parentheses are deciduous.
i1, i2, i3 = deciduous incisors; dc = deciduous canine; dp2, dp3, dp4 = deciduous premolars; I1, I2, I3 = permanent incisors; C = permanent canine; P2, P3, P4 = permanent premolars; M1, M2, M3 = molars.

Earlier French Period, Late 18th Century, Working Area (EF5)

ID #	Unit	Event	Bone	End	Fusion	Estimated Age in Months	Teeth Wear Stage, based on Grant (1982)[1]									
							I1 (i1)	I2 (i2)	I3 (i3)	C (dc)	P2 (dp2)	P3 (dp3)	P4 (dp4)	M1	M2	M3
111-1	W35S103	1011	CAL	W	U	<30										
111-2	W35S103	1011	PH1	W+E	U	<24										
111-3	W35S103	1011	PH1	DE	U	<24										
111-4	W35S103	1011	PH2	W	F	>12										
111-5	W35S103	1011	TIB	DE	U	<24										
111-6	W35S103	1011	TIB	DIS	U	<24										
112-1	W35S103	1011	PH1	W	U	<24										
112-2	W35S103	1011	ULN	DE	U	<42										
113-1	W34S103	1011	PH1	W	F	>24										
113-2	W34S103	1011	PH2	W	F	>12										
113-3	W34S103	1011	TIB	D+E	U	<24										
113-4	W34S103	1011	ULN	DE	U	<42										
117-1	W35S104	1011	PH2	W	I	~12										
118-1	W34S102	1011	HUM	PE	U	<42										
118-2	W34S102	1011	PH1	W	U	<24										
119-1	W35S102	1011	MC3	W	U	<24										
119-2	W35S102	1011	PH1	W	U	<24										
119-3	W35S102	1011	PH2	W	U	<12										
126-1	W35S104	1019	MC3	DE	U	<24										
128-1	W35S101	1019	MAN	F	-	12-16						U	U	e	a	
128-2	W35S101	1019	HUM	DIS	F	>12										
128-3	W35S101	1019	MT3	W	U	<24										
128-4	W35S101	1019	PH1	W	I	~24										
128-5	W35S101	1019	TIB	D+E	U	<24										
129-1	W36S104	1019	HUM	P+E	U	<42										

[1] Tooth between parentheses are deciduous.
i1, i2, i3 = deciduous incisors; dc = deciduous canine; dp2, dp3, dp4 = deciduous premolars; I1, I2, I3 = permanent incisors; C = permanent canine; P2, P3, P4 = permanent premolars; M1, M2, M3 = molars.

Anglo Newfoundlander Period, c.1790-1815 (A-N)

ID #	Unit	Event	Bone	End	Fusion	Estimated Age in Months	Teeth Wear Stage, based on Grant (1982)[1]									
							I1 (i1)	I2 (i2)	I3 (i3)	C (dc)	P2 (dp2)	P3 (dp3)	P4 (dp4)	M1	M2	M3
73-1	W32S103	1005	PH2	W	I	~12										
78-1	W35S104	1005	PH1	W	U	<24										
82-1	W36S104	1005	MAN	F	-	19-23										a
84-1	W38S104	1005	FEM	DE	U	<42										
84-2	W38S104	1005	FIB	PRO	U	<42										
84-3	W38S104	1005	ULN	PRO	U	<42										
86-1	W38S104	1005	MAN	LEFT	-	7-12	V	V		1/2	(lw)	(hw)	(e)	b	b	
87-1	W38S104	1005	MAN	RIGHT	-	7-12					(lw)	(hw)	(f)	b		
88-1	W38S104	1005	MAX	F	-	19-23				lw		W				
88-2	W38S104	1005	MAX	F	-	19-23		W		W						
88-3	W38S104	1005	FIB	DIS	U	<30										
88-4	W38S104	1005	RAD	W	F(P), U(D)	12 - 42										
88-5	W38S104	1005	ULN	D+S	U	<42										
97-1	W33S103	1009	PH3	W	F	>12										

102-1	W36S103	1009	FIB	PRO	U	<42											
102-2	W36S103	1009	FIB	DIS	U	<30											
105-1	W35S102	1009	FEM	DE	U	<42											
105-2	W35S102	1009	MT3	W	U	<27											
105-3	W35S102	1009	SCP	PRO	U	<12											
106-1	W35S104	1009	CAL	W	U	<30											
106-2	W35S104	1009	PH2	W+E	U	<12											
107-1	W35S101	1009	CAL	W	U	<30											
107-2	W35S101	1009	RAD	PRO	F	>12											
250-1	W29S103	1009	PH2	W+PE	U	<12											
338-1	W36S105	1282	FEM	PE	U	<42											
338-2	W36S105	1282	MT3	W	U	<27											
339-1	W36S106	1282	PH1	W	I	~24											
340-1	W36S106	1284	TIB	DIS	I	~24											
341-1	W36S106	1286	PH1	W	U	<24											
341-2	W36S106	1286	PH3	W	F	>12											
351-1	W34S99	1306	PH2	W	F	>12											
401-1	W36S105	1286	MAN	F	-	19-23				mw		d	d	f			
401-2	W36S105	1286	MAX	F	-	19-23							lw	f	c		
401-3	W36S105	1286	PH1	W	U	<24											
401-4	W36S105	1286	PH2	PRO	F	>12											
401-5	W36S105	1286	PH2	W	I	~12											
401-6	W36S105	1286	PH3	PRO	F	>12											
410-1	W34S100	1304	PH1	PE	U	<24											
411-1	W34S100	1306	MAX	F	-	16-20							a	e	a	v	
412-1	W34S97	1306	PH2	W+PE	U	<12											

[1] Tooth between parentheses are deciduous.
I1, i2, i3 = deciduous incisors; dc = deciduous canine; dp2, dp3, dp4 = deciduous premolars; I1, I2, I3 = permanent incisors; C = permanent canine; P2, P3, P4 = permanent premolars; M1, M2, M3 = molars.

Later French Period, 19th Century (LF1)

ID #	Unit	Event	Bone	End	Fusion	Estimated Age in Months	Teeth Wear Stage, based on Grant (1982)[1]									
							I1 (i1)	I2 (i2)	I3 (i3)	C (dc)	P2 (dp2)	P3 (dp3)	P4 (dp4)	M1	M2	M3
54-1	W32S103	1001	CAL	PRO	U	<30										
54-2	W32S103	1001	RAD	PRO	F	>12										
54-3	W32S103	1001	SCP	PRO	F	>12										
64-1	W36S104	1001	FEM	PE	U	<42										
68-1	W33S103	1001	FEM	D+E	U	<42										
346-1	W34S98	1302	MAX	F	-	12-16						V	V	f	b	
346-2	W34S99	1302	TIB	DE	U	<24										

[1] Tooth between parentheses are deciduous.
i1, i2, i3 = deciduous incisors; dc = deciduous canine; dp2, dp3, dp4 = deciduous premolars; I1, I2, I3 = permanent incisors; C = permanent canine; P2, P3, P4 = permanent premolars; M1, M2, M3 = molars.