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Eating Barreled Meat in Upper Canada: Cultural and Archaeological Implications

Abstract:
Much of the meat consumed in 19th-century southern Ontario (Upper Canada) came in the form of preserved barreled products. The specific ways of obtaining, preparing and consuming these products resulted in unique regional foodways. Through analyses of historical and archaeological evidence, this paper investigates how barreled meat was packed, shipped and purchased in Upper Canada and discusses the various ways its consumption impacted the lives of its residents and contributed to the formation of local identities. An investigation of butchery marks and body portion distributions lead to a possible method for archaeologically distinguishing between barreled and non-barreled meat assemblages.

Keywords: foodways; 19th-century Ontario; barreled meat; butchery analysis
Introduction

Comprising much of what is today the province of Ontario, the province of Upper Canada was first established in 1791, and stretched north along the shores of the Great Lakes (Figure 1). It was bound to the east by the mostly French speaking but British ruled province of Lower Canada and to the south by the nascent country of the United States of America. To its north was Rupert's Land, where the Hudson's Bay Company held exclusive rights to trade and colonize. Already inhabited by various indigenous groups and well surveyed through expeditions conducted by French and English explorers, fur-traders and the military, most of Upper Canada remained unsettled by Europeans until the late 18th and early 19th century when an influx of British immigrants and Loyalists from the United States took advantage of opportunities to develop rich and productive farmlands. This paper focuses on those who settled in the southern, most populous portion of the province around the city of Toronto.

The Upper Canadian economy grew primarily through agriculture, particularly through the production and export of wheat (Jones 1946, Lewis 1975, McCalla 1978). With such a focus, livestock came to play a secondary role on early Upper Canadian farms and historical sources suggest that most initial settlers relied to some extent on barreled meat as a source of food. These mostly originated from the United States and were accessible throughout much of the province. Eventually, Upper Canadian operations became capable of producing barreled meat destined for local and global markets. The product continued to represent an important dietary staple and by the end of the 19th century, the city of Toronto was renowned as one of North America's premier pork-packing centers, with some plants capable of processing over 75,000 hogs a year by 1886 (Kheraj 2013: 135). As a result, the city received a popular moniker that continues to be used today (Hogtown).

Historical zooarchaeology in North America has long concerned itself with reconstructing regional foodways: the study of food and how it was prepared, consumed, and disposed of, and, the cultural meanings assigned to foods and related habits (for summary, see Landon 2009). An integral part of studying past foodways is the exploration of the complex interrelationship between the foods consumed and expressions of identities (e.g., Franklin 2001; Mudar 1978; Otto 1984; Scott 1996; Twiss 2007).

There are two goals to this paper: the first is to explore how the consumption of barreled meat impacted Upper Canadian foodways and how shared struggles related to the management of this food source had the ability to shape local identities. The second is to clarify how barreled meat assemblages can be identified in the archaeological record. Recent stable isotope research gave promising results in terms of identifying livestock grown in Ontario versus those imported from the United States (Guiry et al. 2017).
Considering that research, this paper asks if classic, non-destructive zooarchaeological techniques such as body portion distribution and butchery pattern analyses can identify barreled meat assemblages.

**Procuring meat in Upper Canada**

Pork, beef and, to a lesser extent, mutton, were the most common types of meat consumed by Euro-Canadians living in Upper Canada throughout the 19th-century (Tourigny 2016). Swine could easily be raised by most due to their low-cost maintenance: they did not require much care, could be fed on household rubbish and fattened quite readily (Grier 2006: 276; James 1997; Kenyon and Kenyon 1992; Moodie 1852: 357). Cattle were valuable creatures to have on a new farm: Oxen were the preferred draught animal to clear the land of vegetation and a yoke (pair) of oxen were preferred to harrow these new fields (Traill 1846: 49). Cattle could be left to roam free in the woods where they grazed on wild plants (Edward Longley 1835, in Cameron et al. 2000: 202-203). Sheep were less common but became easier to raise as more land was developed and enclosures were built to keep away predators (Ferris and Kenyon 1983; Need 1838: 90). Since the early Upper Canadian economy was driven by the wheat industry, tending to livestock would have taken away resources from the primary agricultural goal (Jones 1946, Lewis 1975, McCalla 1978). Raising livestock in this part of the world required preparations for the harsh winters where animals needed a place to keep warm and stores of fodder to feed them. Farmers focussed on profiting from successful wheat crops had little time or space to devote to growing winter feed and many of those keeping livestock had to purchase fodder from other suppliers. Procuring stores of fodder was especially necessary upon initial years of settlement and prices for hay, straw and timothy (a type of grass) were often advertised in early Toronto newspapers (Tourigny 2016: 66-67).

Those unable to raise their own meat could rely on urban and rural markets for supplies. Scadding (1873: 40) makes the earliest reference to an official public market in Toronto in 1803. It is in a central location near the water’s edge where livestock and produce were brought on weekly market days. A permanent brick structure was built on site in 1831 and it became known as the St. Lawrence market (Historic Horizons Inc. 2006). The market continued to operate in this location, occupying a succession of different buildings, the latest rendition of which is currently being constructed. The area eventually became a commercial and political center where residents could buy and sell live animals, other food and non-food products (Kheraj 2013: 131-132). As the population grew, the St. Lawrence market expanded and other markets appeared throughout the city (e.g., St. Patrick and St. Andrew Markets). Butchers were eventually allowed to set up shops outside of the public markets after a by-law was passed in 1858 (Kheraj 2013: 133). Various shops and small markets were available in the smaller towns and villages.
spread throughout the remainder of Upper Canada. These rural markets were generally limited in supply in the earlier half of the 19th century, and non-food goods were mostly provisioned by Montreal-based wholesalers (Kenyon 1992: 13). Fresh food products, if available, were likely locally supplied. Making the most out of their situation, rural households would sometimes coordinate the slaughter of livestock to share fresh meat between neighbours and reduce the amount of spoilage (Traill 1857: 171).

The cost of meat

Local newspapers inform us which foods people expected to find at the market and what was regularly or seasonally available. These publications further hint at the values consumers ascribed to each type of product. Table 1 lists prices for meat in Toronto markets for the period when The Globe newspaper was regularly reporting them (between 1845 and 1847). Pork is generally listed as slightly more expensive than beef but nearly doubles in price on some occasions. This is surprising since pork is widely considered to be the staple food source in Upper Canadian Cuisine (Bates 1978; Langton 1904: 79; Kenyon and Kenyon 1992) and is a principal component of most households' meat consumption based on the analysis of multiple archaeological sites (Tourigny 2016). Unlike documents from other North American cities (e.g., New York City - Milne and Crabtree 2001), prices are never offered according to specific cuts of meat (Tourigny 2016: 75-83). This does not suggest specific cuts could not be purchased; they were available from local butcher's shops located outside the main markets (Kheraj 2013; Moodie 1853: 43-46). Smaller units of beef or pork, sold by the pound, are similarly priced; however, bulk prices are substantially greater for pork compared to beef. Prices for pork are mostly only given by the 100 weight. In 1837, John Barnes noted that Toronto's market receives near daily shipments of ready-dressed pigs brought in by the wagon and sold by the hundred weight (Cameron et al. 2000: 249), indicating fresh pork was available in wholesale units at the market. No listings specifically mention barreled pork or beef. Difficulties in identifying differences between fresh and preserved meat in the historical documents could suggest both were sold at similar prices, although Traill (1857: 150) notes barreled meat was cheaper. While market prices changed over time, no price differences are observed between larger urban markets and smaller rural ones throughout Upper Canada (Tourigny 2016: 77-79).

Barreled meat

With few options available for preserving meat Prior to the advent of refrigeration, salting and brining were the most widely used methods. Traill (1857: 148) observes the basic process for cutting up and packing pork in Upper Canada. Following slaughter, the carcass was hung in a cool, dry place until it became stiff, the body was then butchered by first taking off the head, then the hams [hind legs] and forelegs, followed by the "ham shape" [uncertain of body part] and dividing the rest of the carcass into
pieces, cut cleanly through in "chine fashion" [sawn in half through the spine]. All meat joints were then rubbed with clean salt and further packed with salt as tightly as possible into a barrel to be filled with a strong brine. Hattori and Kosta (1990: 85) describe similar steps undertaken by American industrial pork packing centers and note that, although minor variations existed in the process, most North American packing centers followed similar butchery, salting and brining processes (for more details see Moore 1820, 1838; Richardson 1851; Skaggs 1986; Youatt 1847). Pickling was another meat preservation option available to the home cook whereby a liquid consisting of salt brine, alum, treacle and potash would be poured over packed, unsalted meat which was then left to pickle for about three weeks (Traill 1857: 148).

Residents in the first half of the 19th century mostly relied on barreled pork imported from the United States. Large quantities of preserved meat were recorded passing through Upper Canada and beyond to foreign markets. In 1833, Montreal received over 30,000 barrels from Cincinnati by way of Upper Canada while only 1,800 barrels originated from Upper Canada itself (Jones 1946: 128). Furthermore, many of the Upper Canada barrels undergoing inspection in Montreal were deemed sub-standard and unfit for sale due to inconsistent butchery and packing, defective barrels and spoiled meat (Moore 1838). Such observations suggest the presence of a mostly amateur and unregulated meat packing industry operating in Upper Canada at the time. In the 1830s, Cincinnati was widely considered the primary pork packing center of the United States and was often referred to as ‘Porkopolis’ (McGlone and Pond 2003: 6; Pate 2005: 65). The completion of the Welland Canal in 1829, and later the Miami and Erie canals in 1840, allowed Cincinnati and other major American meat packing centers (e.g., Kansas City, St. Louis, Chicago) to easily move their products by water into Upper Canada (Guiry et al. 2015: 22; McGlone and Pond 2003: 6).

A range in the quality of barreled pork was available for purchase. Barrels each contained approximately 200 lbs of product. They could be purchased in full (208 lbs) or in halves (108 lbs), the barrel itself weighing eight pounds (Moore 1820). Barrels were graded based on the types and ratio of skeletal parts they contained and the choicest pigs were likely reserved for the fresh meat trade (Hattori and Kosta 1990: 86). Archaeological evidence suggests variability in body parts between barrels of the same grade, indicating that strict standards were not always met (Brophy and Crisman 2013). The government of Lower Canada recognized four grades by law: "Mess", "Prime Mess", "Prime" and "Cargo" (Moore 1838). As many of the products leaving Lower Canada travelled through Upper Canada, the legislation passed in the former province likely affected composition of the barrels consumed in the latter. These grades were also recognized and produced by American pork packing facilities. State mandated definitions for the grading of pork barrels published in the Louisiana Daily Public Advocate in 1839 (Brophy and Crisman 2013) are remarkably similar to the Lower Canada definitions.
The highest quality, and most expensive barrels were known as “Mess Pork” and contained nothing but “side pieces” taken from between the shoulder and the hips but not including the flanks (Brophy and Crisman 2013: 72-73; Moore 1838; Traill 1857:148). Slightly lower quality barrels were known as “Prime Mess” and contained the entire carcass of a well-fattened pig weighing between 200 to 250 pounds (200 lbs after removal of “lard and trimmings off”) (Moore 1838). Traill (1857: 148) notes that "Prime Mess" barrels do not necessarily contain the remains of one full hog but generally contained hams, shoulders, as well as sides. “Prime Pork” barrels contained indiscriminately cut up entire hogs, including heads and feet (Traill 1857: 148). Moore's (1820: 9) definition for “Prime Pork” was more specific whereby a barrel should consist of “[from three large hogs] three shoulders, twenty pounds of head, and every other part of the hog to make up the quality or weight”. He goes on to say that a barrel of this grade should not contain legs, if legs are included, they need to be “cut handsomely above the knee and gambrel joints”. Finally, the most affordable and lowest quality barrels were graded “Cargo Pork”. These were composed of leaner pork carcasses and “any parts[…] of merchantable pork”, excluding shanks, brains, ears and snouts (Brophy and Crisman 2013: 72-73; Moore 1838). Lower quality meat joints such as side pieces considered too thin for commercial grades were sometimes packed into barrels referred to as “Thin Mess” pork; but these were only suitable for home consumption (Moore 1838). The various meat joints present in a barrel of pork were not the sole criteria upon which people judged its value. The quality of the meat was equally important and depended on multiple factors such as the size and breed of pig and the way the animal was fattened prior to slaughter (Traill 1857: 150).

Barreled beef products were similarly graded according to body portions present and the age and weight of the animal when it was slaughtered. Barrels of “Mess Beef” were deemed the highest quality and contained the “choicest pieces only” from “well-fatted and properly aged” cattle, including briskets, thick flanks, ribs, rump and sirloin (English 1990: 64; Moore 1838). “Prime Mess” beef should consist of good and fat but second-class cattle and include all but shank and neck pieces. “Prime Beef”, followed by “Cargo Beef” barrels contained increasing levels of lesser choice parts from lower grade animals, including necks and shanks. No documents suggest heads or feet were included in barreled beef and intact barrels originating from Montreal did not show evidence of these body parts (English 1990). Legislation required all meat segments be cut “as nearly square as may be” to pack them tightly into the barrel. Beef could not be cut into pieces that weighed more than eight or less than four pounds (more than six and less than four for pork) thus ensuring proper preservation (Act of Lower Canada 1839). These laws differed from European and American rules where joints were cut into slightly larger pieces (Moore 1838:7).

Significant innovations in transportation and food preservation technologies along with population growth and industrialization of the city changed the way Upper Canada was supplied with food in the second half
of the 19th century. Arrival of the railway in Toronto in 1856, allowed for products to be brought in from further distances at faster speeds. Mechanical refrigeration technology became more prominent by the end of the 19th century, allowing meat to remain unspoilt for longer (Rixson 2000: 268-277). Over time, urban consumers increasingly relied on retail grocers selling tinned, pre-cut and packaged meats originating from industrial meatpacking facilities (Kheraj 2013: 135).

*Daily struggles with barreled meat*

Issues related to the provisioning, keeping and preparation of barreled meat represented daily challenges shared by residents living throughout Upper Canada and appears to have been a common topic of conversation. Procuring and managing barreled meat was often discussed in cookbooks and guidebooks aimed at helping recent immigrants manage a successful Upper Canadian household and in personal correspondences from recent immigrants to their families back in Britain. While cookbooks can enlighten us on past food preparation strategies and subconscious meanings attached to certain foods (e.g., Yentsch 2013), the extent to which they were followed by home cooks and influenced local foodways remains unknown. For this research, information was sought from publications where authors described personal experiences or observations related to the use of barreled meat in Upper Canada as opposed to cookbooks that simply listed sundry recipes which may or may not have been followed.

A top priority for any Upper Canadian household was to procure a reliable source of meat throughout the year. Urban dwellers likely had greater access to market products but rural residents were not obliged to rear their own livestock. Historical documents suggest that even those living in the furthest backwoods during the early days of settlement had access to American barreled pork. John Langton (1926: 76), an English immigrant to the backwoods of Peterborough, notes in a letter penned in 1834, that “pork is our greatest expense; […] we have ordered thirty barrels between us [him and his neighbour, from a connection in Ohio]”. Langton had to journey two days through the forests on rudimentary roads to retrieve these barrels, emphasizing his willingness (or need) to obtain them. Pork and other products were not necessarily paid for with cash, and bartered deals based on the exchange of goods were common practice. Langton's actions highlight how the early Upper Canadian farmer was not concerned with livestock, but in developing agricultural fields for profitable wheat crops.

While barreled meat was a dependable source of protein, it often proved difficult to prepare and unappealing to eat. Traill (1857:150) noted that most barreled pork is "coarse, loose and flabby" because the pigs were raised on a distillery or nut-based diet and sent to be fattened in the woods on beech-mast, acorns and other such food. She thought this type of pork difficult to cook as it was soft and tended to run
away to oil in the frying pan. She recommended first drying or smoking these joints rather than cooking them straight from the brine. It was well known that the best pigs for barreling were those raised on a diet of grains and corn as these tasted better and tended to lose less weight once salted (Langton 1904: Vol.1, 187; Langton 1926: 129; Moore 1838; Traill 1857: 150). Barrels packed in the autumn needed to be Repacked in fresh salt in the spring to keep a little longer (Moore 1838). John Langton often dealt with meat that did not keep, but a determined cook eager to make use of all that was purchased will find ways of using all the meat. For one of his meals, Langton boiled the pork three times over to be rid of most of the saltiness and rancidity; he then stewed the meat until tender, added a bit a gravy and served it with some soup, to create what he described as "an excellent dish" (Langton 1926: 137-138). He casually mentions having to be mindful of occasional lead balls remaining buried within the pig's head.

Many of Upper Canada's earliest settlers relied heavily on barreled meats in their first years in the province. Langton (1926: 58-59) describes salt pork as the "standing dish for breakfast, dinner and tea". In 1838, John's sister Anne Langton (1904) referred to pork as Upper Canada's "national dish". It is unsurprising that earlier scholars considered pork to play a dominant role in Upper Canadian cuisine given all the attention it received in early diaries and personal accounts of travels through the province. Some accounts even tended towards the dramatic:

"I had such a horror of the pork diet, that whenever I saw the dinner in progress I fled to the canoe, in the hope of drowning upon the waters all reminiscences of the hateful banquet; but even here the very fowls of the air and the reptiles of the deep, lifted up their voices and shouted "Pork, pork, pork!"" (Moodie 1852: 48-49)

Of course, barreled meat was not unique to Upper Canada. It was previously an important victual among fishermen and the military, was being industrially processed across North America and shipped internationally (Betts 2000; Guiry et al. 2012; Noël 2010; English 1990). It was considered a staple across much of the United States, especially amongst middle-class homes, in frontier regions and in the South (Dawson 1911: 362; DeBow 1854, 1: 377; Hattori and Kosta 1990: 82, 87; Holliday 1981: 314; Skaggs 1986: 40); yet, it obviously left quite the impression on early Upper Canadians who often required effort and determination to procure, prepare and eat this type of meat.

Archaeological evidence

The information presented above makes clear that all body parts can be included in barreled pork. As a result, archaeologists have a difficult time distinguishing between barreled and fresh assemblages based on body portion representation (Hattori and Kosta 1990; English 1990). This section goes beyond general
body portion distribution patterns by looking at the presence of specific bone elements and the butchery patterns they display. Primary data was gathered as part of a PhD project and faunal assemblages originate from Toronto-area archaeological sites dating from the late 18th through to the early 20th centuries (Figure 1, Table 2) (Tourigny 2016). The assemblages were recovered by commercial archaeology units or state-run heritage agencies. Elements were identified according to a zoning system first used by Watson (1979) as later refined by Dobney and Reilly (1988) and Mahoney (2015). The minimum number of elements (MNE) was determined by taking into account duplication of identified zones, side, age and sex. Age at death was based on the state of epiphyseal fusion while considering the possibility that epiphyses and diaphyses can represent part of the same unfused element. Estimates for timing of epiphyseal fusion were gathered from Chaplin (1971), Maltby (1979) and Silver (1969).

Some of these specimens have undergone stable isotope analyses, and the data yielded interesting results (Guiry et al. 2017). The research hypothesizes that livestock reared in Upper Canada would have primarily been fed wheat crops and other local plants (all C3 plants) whereas animals raised in the United States were maize-fed (a C4 plant), thus leaving distinct chemical signatures in the bones. Their results show significant differences between pork and cattle and between urban and rural assemblages in Upper Canada. Pigs from rural sites had low C4 values while those from urban sites provided a much wider range, suggesting the presence of American and Canadian pigs. Pigs from higher socio-economic assemblages in urban areas had strong C4 signatures. On the other hand, cattle from across urban and rural Upper Canada exhibit very weak C4 signatures, suggesting all are locally raised. Guiry et al. (2017: 7) further noted the specimens with C4 signatures exhibited butchery patterns "consistent with common salt meat cuts". This section builds on this statement and explores if certain butchery marks or body parts can be representative of barreled meat.

_Pork remains from Upper Canada_

Pig remains featured prominently in most Upper Canada assemblages (up to 82% of identified artiodactyl specimens). Mortality profiles suggest animals were raised for the sole purpose of providing meat, with the majority being slaughtered in the first two years of life and a few kept longer for breeding purposes (Figure 2). Butchery marks were recorded and compared to those observed in known barreled pork collections: the intact Ohio-packed pork barrels recovered from The Heroine steamboat which sank in Oklahoma in 1838 (Brophy and Crisman 2013), the mid-19th century New York-packed barrels of "Prime Pork" recovered from the Hoff Store site in California (Hattori and Kosta 1990), and barrels of salted pork and beef originating from Montreal and recovered from the wreck of the William Salthouse, which sank in Australia in 1841 (English 1990).
The *Louisiana Daily Public Advocate* noted in 1839, that half heads were included in ‘Prime Pork’ barrels but without the ears, snouts, and brains (Brophy and Crisman 2013: 72). Only one cranium fragment in the Upper Canada assemblages had evidence of butchery near the ear. Unlike the skulls found in the *Heroine’s* and the *William Salthouse’s* barrels, none in the Toronto assemblages were sawn in half along the sagittal plane. Few mandibles with evidence of butchery were identified in the Upper Canada assemblages: one from a rural site had a chop mark on the medial surface of the corpus, below the premolars and molars while another had three chop marks on the lateral side of the basal half of the ascending ramus. If representative of barreled pork, it is possible they were removed from the head prior to packing, like the one ones recovered from the known barreled assemblages. Chop marks from some of those barrels are consistent with one Upper Canada specimen where there is chopping at the junction of the horizontal and vertical rami (Brophy and Crisman 2013; English 1990; Lucas 2007). At the Hoff store site, three mandibles exhibited evidence of the 'anterior edge of the chin' being chopped off (Hattori and Kosta 1990: 83); however, such marks were not observed in any of the Upper Canada materials.

Butchery of the vertebrae was the most consistent across Upper Canadian assemblages. Many were sawn in half along the sagittal plane, typically in a caudal to cranial direction as if the full carcass was hung up by its hind legs and split in half through the center (or near center) of the spine. These marks fit with Traill's (1857: 148) descriptions of processing the carcasses in "chine fashion". They are also present in all three known barrel assemblages. Evidence for decapitation in the Upper Canada assemblages was observed on occipital, atlas and axis elements. While similar marks are present in barreled assemblages, the process of decapitation and subsequent halving of the carcass through the spine is not unique to the professional meat packing industry. It was a standard butchery technique that is often recorded in the archaeological record and documented in both professional and domestic settings (e.g., Landon 1996: 72; Mettler 1986; Rivers 1916; Szuter 1996). The technique continues to be standard practice today (Savell 2000). Some vertebrae occasionally show evidence of being sawn through the transverse plane, as if to separate the halved carcasses into smaller sections.

All evidence for butchery of the forelimbs in Upper Canada is from specimens recovered from rural assemblages. Five scapulae were either sawn or chopped in a direction that was perpendicular to the long axis of the bone with the likely intention of separating it through the neck as if to disarticulate the shoulder from the leg (Figure 3a). Six humeri were sawn or chopped through the proximal third or central portion of the diaphysis. These marks are not observed in the Ohio-packed barrels recovered from *The Heroine* but were present in the Hoff Store and *William Salthouse* assemblages. The Hoff Store site also included saw marks through the distal end of five humeri. Three ulnae from Upper Canada assemblages were chopped or sawn through at or near the articular surface of the semi-lunar notch, and one was sawn
through its central diaphysis. These are in similar location as those identified in the *Heroine* and *William Salthouse* materials (Brophy and Crisman 2013: 81; English 1990: 67).

Four innominate specimens were identified with similar butchery patterns: two were sawn through the shaft of the ilium as if to separate the blade from the remainder of the bone. The same butchery marks were observed in both barreled and non-barreled assemblages at the Hoff Store site but were not reported in other barreled assemblages (Hattori and Kosta 1990: 83, 85). Another was sawn through both the ischium and the pubis and another transversely through the ischium (Figure 3b). Few femora were recovered with butchery marks; one from the Ashbridge Estate was chopped through its central diaphysis while another had chop marks on the medial surface of its distal diaphysis. Every one of the six tibiae and fibulae identified with butchery marks consisted of a saw or chop mark cutting through the diaphysis along a plane perpendicular to the bone’s long axis. This was usually done through the mid-diaphysis. Scarcity of butchery marks on the pelvis and femur was also observed in the *Heroine*’s assemblage where these two elements appear to have remained articulated to keep the large joints of ham intact. The tibiae and fibulae formed part of the hind shank which carried little meat towards the distal end of the bones and were often cut mid-diaphysis (Brophy and Crisman 2013: 81). While there is little variability in terms of butchery location on the limbs, not all specimens recovered from barrels had butchery marks.

Some elements representative of distal extremities had tool marks although it is difficult to draw any noticeable pattern between rural and urban sites. The Ashbridge Estate assemblage offers the most evidence for butchery of the distal extremities where five astragali and two calcanei had saw marks (Figure 3c). Two calcanei from the Queen Street site were sawn in a similar fashion. All marks on the bones of the ankle suggest this was one location commonly targeted for disarticulating the feet from the lower limbs. At the later Lewis occupation, two metapodials have chop marks through their diaphysis as does one proximal phalanx that was chopped in half. At the Hall site, a distal articular surface of a medial phalanx was sawn off. Few foot elements were recovered from the comparative barreled assemblages but historical sources indicate feet were regularly packed into certain grades of barrel. Despite the supposed inclusion of feet in barrels of "Prime" grade pork, few were recovered from the ones at the Hoff Store site (Hattori and Kosta 1990).

With few exceptions, body portion representation was consistent between Upper Canada assemblages. The general pattern was for all body parts, including heads and feet, to be proportionally present at most sites (Tourigny 2016). The Ashbridge Estate had more foot elements while an early 19th-century component of the Lewis site had more heads. We know that barreled pork products contained all body portions and therefore, a slight over-abundance of heads or feet alone cannot be immediately linked to the
presence or absence of barreled pork assemblages. There is one body part which Moore (1820) notes should be excluded from barreled products: the ‘canine portion of the jaw’. Butchery marks intended to remove that portion of the snout were observed in all known barrel assemblages. Archaeological evidence suggests some manufacturers removed the mandibles prior to removing the snout (i.e., The Heroine and William Salthouse barrels) and therefore only the upper jaw displays evidence of snout removal. If most snouts were removed prior to packing, then their presence (premaxillae, upper canines and upper incisors) within an assemblage may be indicative fresh pork consumption. An over-abundance of these elements may be indicative of the processing of pork for barreling. Table 3 lists the number of times these elements were identified in Upper Canada assemblages. Two assemblages (Ashbridge Estate and the earlier Lewis component) have far more of these remains than any other. Agricultural census records from 1851 note that barrels of beef and pork were being produced on the Lewis property at the time (TRCA 2013). Few premaxillae were identified from urban assemblages, despite some larger sample sizes. Deposits known to contain barreled American pork (Bell and Dollery) have no evidence of this body part. Other rural assemblages generally featured smaller sample sizes yet produced more of these elements, suggesting a greater proportion of live pigs.

**Beef remains from Upper Canada**

Cattle remains were well represented in Upper Canada faunal assemblages, making up between 12 and 57% of identified artiodactyls. In two cases (Queen Street and Hall sites), cattle identifications outnumbered all others in the assemblage (Tourigny 2016). Unlike pork, the age at death for cattle were slightly more varied; however, most died prior to reaching 36 months of age, suggesting they were primarily raised for beef (Figure 4). Each site contained a few cattle older than 84 months, suggesting the presence of either breeding stock or dairying cattle. The only archaeologically recovered 19th-century beef barrels comparable to these assemblages are from the wreck of the William Salthouse (English 1990).

As expected, cattle elements showed more evidence for butchery relative to those of pigs since they are larger animals whose carcasses require more butchery to provide joints of meat of an appropriate size for a household meal. Elements of the head were poorly represented except for a few sites (Queen Street, Ashbridge Estate, John Beaton II) where they formed between 31% and 93% of the cattle assemblage. The highest proportion of head elements was recovered from the Queen Street site where one feature contained a minimum of 11 elderly cattle heads and almost no other parts of the body. This assemblage is unlikely to represent a food-related deposit (Tourigny 2016). There is little evidence for butchery on cattle head elements recovered from other assemblages. No head elements were recovered from the William
Salthouse wreck and historical documents do not suggest heads formed part of barreled beef assemblages. Like the pig vertebrae, many of the cattle's were sawn in half along the sagittal plane in a caudal to cranial direction, as if to separate the carcass into equal halves. Some transverse cuts are occasionally observed along the upper cervical vertebrae (as if to remove the head or split the neck joint into smaller segments) or at smaller intervals along the lumbar and lower thoracic vertebrae (as if to create what we would call T-bone steaks). Ribs were often sawn at both ends, creating lengths that varied from 1cm to over 13cm. Excavations of the William Salthouse recovered similar cuts where the evidence suggests ribs and vertebrae were kept together and larger joints were “squarely cut” (English 1990: 68). While the butchery of vertebrae into lateral halves relates to initial division of the carcass, smaller cuts creating sections of ribs and vertebrae could relate to further division of wholesale cuts or butchery undertaken by the household prior to preparing a meal.

Cattle scapulae from Upper Canadian sites often featured evidence for butchery. These are mostly saw marks transecting the blade to create slices ranging from 3 to 11cm in width. These were either perpendicular to the long axis of the bone or along a near 45-degree angle (Figure 5). Saw or chop marks were occasionally observed through the scapular neck, as if to separate the shoulder blade from the upper forelimb. Similar marks through the scapular neck were observed in the William Salthouse materials but not the marks through the scapular blade (English 1990: 66), suggesting the cuts through the anterior portion represent further butchery to create appropriate servings for a household meal. Some scapulae recovered from a 19th-century site in the city of Ottawa showed examples of cuts meeting at right angles and have been interpreted as possible barrel cuts (Needs-Howarth 2009).

Other bones of the fore and hind limbs (humeri, radii, ulnae, innomminates, femora and tibiae) all show evidence of being cut through the diaphysis in a direction perpendicular to the long axis of the bone. These cuts occur anywhere along the shaft of the diaphysis and appear to function to break up the limbs into manageable sizes. They represent secondary butchery marks; however, many limbs show evidence of further butchery to create smaller meat joints. This was especially evident for specimens from the shaft of the ilium and the diaphysis of the femur which were often sawn into smaller segments ranging in size between 1 and 12 cm in width (for examples from the femur, see Figure 6). These were not observed in the barreled beef assemblages recovered from the William Salthouse. Femora recovered from those barrels were only cut through the proximal and distal metaphyses without being further segmented. Overall, no single butchery mark could be uniquely and confidently associated with a barreled assemblage due to the inconsistent nature of butchery marks within barreled assemblages and the appearance of similar marks in fresh meat assemblages.
Identifying barreled meat assemblages

Archaeological and historical evidence indicate that both fresh and barreled meat products played an important role in 19th-century Upper Canadian foodways; however, archaeologically identifying the difference between fresh or preserved meat is not straightforward. Variability in butchery and body portions present within the Heroine, William Salthouse and Hoff Store assemblages suggest few patterns can be uniquely linked to barreled meat. In Upper Canada, the extent to which urban and rural areas relied on barreled products differed as did the origins of those products. Tracking body portions present in an assemblage appears to be the best way to identify the presence of barreled vs. fresh assemblages. Historic documents and archaeological finds indicate cattle heads and feet did not commonly form a part of barreled beef assemblages (e.g., English 1990; Moore 1838). The presence of cattle heads and feet in most Upper Canadian assemblages suggests many of its residents had access to fresh and locally raised beef. In 1846, tariffs were imposed on American beef products, effectively ending their importation into Upper Canada (Examiner, April 1, 1846 in Jones 1946: 134). History correlates with the results presented here and with stable isotope data (Guiry et al. 2017), all of which suggest beef was locally produced.

The presence of barreled pork within an assemblage cannot be inferred by the absence of heads and feet alone. While the province imported most of its pork from the United States in the first half of the century, local operations were eventually capable of supplying local markets. Stable isotope analyses can inform if pigs were imported or raised locally but cannot identify if the latter were consumed as fresh or barreled products. However, since the snout was usually removed prior to packing salt pork, the identification of its elements (premaxillae and related teeth) can be used to suggest the presence of fresh pork and their over-representation may point to locations where barreling took place.

Few butchery patterns inform on the origin of the meat as a fresh or barreled product since butchery methods were somewhat standardized at the time (Plumptre 1816; Ward 1882). Similar processes for initial division of the carcass were shared by home cooks, professional butchers and the meat packing industry. Butchery patterns become increasingly obscured as the home cook or local butcher further break down fresh and barreled joints of meat to create appropriate serving sizes. Personal identities and household preferences also come into play when deciding how to further prepare and cook joints of meat (Kuehn 2007: 200; Twiss 2007; 2012: 381). While legislation required all barreled meat be cut up "as nearly square as may be" (Act of Lower Canada 1839), identifying a squarely-cut joint of meat is difficult since the joints consist of multiple elements which often lose their association with one another in the archaeological record. Only the recovery of a specimen with two cuts meeting at a right angle could be
identified as squarely-cut and these are not often recovered. Further confusing the matter is the observation that slight variations in butchery existed between different packing plants and inconsistencies were recorded in the butchery practices between barrels produced by the same operations. Furthermore, different regions were required to follow local regulations and adherence to these was not always followed (Hattori and Kosta 1990: 86). Different approaches to butchery are also noted between different regional centers (De Voe 1867; Kitchiner 1822; Parloa 1881; Schweitzer 2010; Stephens 1838), as butchers catered to the demands of the local populace and were further influenced by quality and size of the carcass, the economic climate and their own training (English 1990: 68; Horowitz 2006: 26). Such inconsistencies make it difficult to identify and link a unique set of butchery patterns to the production of barreled meat.

The role of barreled meat in shaping early Canadian foodways

Foodways represents an all-encompassing concept that looks at the social meanings embedded within the process of eating; a process that includes the production, distribution, consumption (Anderson 1971: 29; Deetz 1977: 73) and disposal (Graffam 1984: 1) of food. Studying foodways allows archaeologists to move beyond dietary reconstructions and study the conscious and subconscious meanings attached to food and food habits. Considering the information presented above, incorporating barreled meat into one’s diet resulted in unique food habits related to its procurement, preparation, taste and consumption which likely influenced early Canadian identities.

Defining 'traditional' Canadian cuisine is a difficult task for such a young country, one that is further confounded by the many cultures making up the current population and the English, French and indigenous roots of the country's early residents. Focusing on the traditional foodways of a specific region of Canada and on one cultural group allows us to explore early cultural identities for a segment of the population. Our current understanding of eating habits of early Euro-Canadians of British heritage is that they were somewhat different than prevailing British customs at the time. Nineteenth-century sources (Moodie 1852, 1853; Traill 1846, 1857) suggest Upper Canadian meals kept a focus on dietary staples such as meats, breads and tea; however, like their American counterparts, Upper Canadians could include new foods as a result of their surroundings. Ingredients such as maple sugar, maize, pumpkins and a variety of wild fruits were reportedly common at the Upper Canadian table, along with various types of wild meat including venison, turkey, partridge, passenger pigeon, squirrel, duck, other bird species, and hare (Traill 1846, 1857). However, archaeological investigations suggest wild meats rarely played a regular role in local diets (Tourigny 2016). While pork and beef are recognized as a staple ingredient at
the Upper Canadian table, there is little consideration of the form this meat took and how it affected the ways people related to their food.

Barreled meat, especially pork, was essential for newly established households incapable of raising enough of their own livestock, representing a dependable supply of meat. However, historical evidence indicates the meat was of questionable taste and quality, that it was difficult to cook with and that one simply had to get used to incorporating it into most meals. Early Upper Canadian foodways were partly defined by the struggles of obtaining, preparing and eating barreled meat. For recent immigrants, shared hardships like these were likely associated with a frontier identity and life in a new country or province. Guidebooks and cookbooks further emphasized the Upper Canadian’s struggle with barreled meat and in effect, possibly influenced its sale, preparation and consumption as well as people’s attitudes towards it.

There is evidence to suggest barreled pork played a role in the negotiation of identities between socio-economic groups. Wealthier Upper Canadians could procure and consume a higher quality of preserved pork. Stable isotope analyses revealed that most pigs consumed in rural Upper Canada were raised locally while the city of Toronto featured a mix of local and American raised pigs (Guiry et al 2017). Nearly all lower status assemblages revealed the presence of locally raised pork whereas American, corn-fed pigs were mostly recovered from higher-status households in Toronto. The higher cost of corn-fed pork is unsurprising since they were known to be tastier and "generally better" products (Langton 1838: Vol. 1, 187; Langton 1926: 129; Moore 1838; Traill 1857: 150).

Conclusion

While evaluating the extent to which barreled meat contributed to an archaeological assemblage remains challenging, it is clear this type of meat played an important role in the provisioning of 19th-century households throughout Upper Canada and beyond. The difficulties associated with procuring, keeping and preparing it resulted in a set of foodways that characterized the meals consumed throughout the province. Strategies related to the preparation and consumption of less than appetizing staple food products were shared between residents and common struggles related to food preservation and the necessities of eating helped shape early Upper Canadian identities. Some hoped to avoid having to eat it, others made do. Those of higher socio-economic standing could afford higher quality barrels of corn-fed pork and enjoy a slightly better product. Stable isotope analyses can identify the faunal remains originating from outside Ontario while classic zooarchaeological techniques like body portion analyses can inform on the presence or absence of barreled meat assemblages. Pig snouts were usually removed prior to the packing of pork.
barrels and the archaeological presence of affiliated bone elements points to the consumption of fresh pork. An over-representation of these elements may be linked to pork-packing activities. Similarly, cattle heads and feet were removed prior to barreling and their archaeological presence is indicative of the nearby slaughter of the animal and/or the procurement of fresh beef. Standardization of carcass division combined with similarities between the home cook, professional butcher and meat packing facilities renders the analysis of butchery marks relatively uninformative in distinguishing between fresh and barreled meat assemblages.
Acknowledgements

Many thanks to Suzanne Needs-Howarth for reviewing an early draft and to Douglas Mitcham for producing the first figure. This work draws from the results of a PhD dissertation supported by the Social Sciences and Humanities Research Council of Canada (award number 752-2013-0068) and the University of Leicester.
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Table and figure captions

Table 1: Prices of meat products (excluding fowl) in 1840s Toronto markets as reported in *The Globe* newspaper and reflecting the previous day's prices. Prices are recorded in shillings (s.) and pence (d.).
<table>
<thead>
<tr>
<th></th>
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<td>Low</td>
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Table 2: List of sites included in this study and the number of pig and cattle specimens identified in each assemblage.

<table>
<thead>
<tr>
<th>Site (Borden number)</th>
<th>Occupation dates</th>
<th>Pig NISP</th>
<th>Cattle NISP</th>
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<td><strong>Toronto city centre</strong></td>
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<tr>
<td>Bell (AjGu-68)</td>
<td>1840-1870</td>
<td>16</td>
<td>38</td>
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<tr>
<td>*Bishop’s Block (AjGu-49)</td>
<td>Late 19th century</td>
<td>1258</td>
<td>499</td>
</tr>
<tr>
<td>*Dollery (AjGu-81)</td>
<td>1855-1878</td>
<td>197</td>
<td>97</td>
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<tr>
<td>Queen St. (AjGu-63)</td>
<td>1830s to 1850s</td>
<td>44</td>
<td>212</td>
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<td><strong>Rural Toronto</strong></td>
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<td></td>
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<tr>
<td>Ashbridge Estate (AjGt-1)</td>
<td>1796 to 1904</td>
<td>641</td>
<td>301</td>
</tr>
<tr>
<td>Graham (AlGs-370)</td>
<td>1830s to late 19th century</td>
<td>108</td>
<td>18</td>
</tr>
<tr>
<td>Hall (AlGw-68)</td>
<td>1850s to 1910s</td>
<td>82</td>
<td>128</td>
</tr>
<tr>
<td>John Beaton II (AlGv-219)</td>
<td>1840s to 1870s</td>
<td>56</td>
<td>20</td>
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<tr>
<td>Lewis (AlGu-365)</td>
<td>1825 to 1850; 1870 to 1880</td>
<td>235; 128</td>
<td>31; 73</td>
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<tr>
<td><em>Data collected by Needs-Howarth (2011, 2012)</em></td>
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Table 3: Distribution of pig (*Sus scrofa*) premaxillae and premaxillary teeth. NISP = number of identified specimens; MNE = minimum number of elements.

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<thead>
<tr>
<th>Site</th>
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<th>% Pig NISP</th>
<th>MNE</th>
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<tr>
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<tr>
<td>Dollery</td>
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<td>0</td>
</tr>
<tr>
<td><strong>Rural assemblages</strong></td>
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</tr>
<tr>
<td>Ashbridge Estate</td>
<td>34</td>
<td>5.3</td>
<td>7</td>
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<td>Graham</td>
<td>3</td>
<td>2.8</td>
<td>1</td>
</tr>
<tr>
<td>Hall</td>
<td>4</td>
<td>4.9</td>
<td>1</td>
</tr>
<tr>
<td>John Beaton II</td>
<td>1</td>
<td>1.8</td>
<td>1</td>
</tr>
<tr>
<td>Lewis (early component)</td>
<td>17</td>
<td>7.2</td>
<td>3</td>
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<tr>
<td>Lewis (later component)</td>
<td>2</td>
<td>1.6</td>
<td>1</td>
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Figure 1: Map of Upper Canada and location of archaeological sites. 1. Ashbridge Estate, 2. Graham, 3. Hall, 4. John Beaton II, 5. Lewis. Urban assemblages all located within the urban core of the city of Toronto.
Figure 2: Age at death of post-cranial pig specimens according to the state of epiphyseal fusion.
Figure 3: Summary of butchery marks observed on various specimens of Scapulae (left), innominates (center) and tarsals (right) from the Ashbridge Estate. Solid lines represent either a saw or a chop mark. Images modified from Pales and Garcia (1981).

Figure 4: Age at death of post-cranial cattle specimens according to the state of epiphyseal fusion.
Figure 5: Summary of tool marks observed on cattle specimens from the Ashbridge Estate (left) and the Graham sites (right). Each line represents a saw mark; grey areas represent the section of bone recovered between two saw marks (image of a bovid scapula from Popkin (2005)).

Figure 6: Example of saw-cut femoral diaphysis segments from the Hall site.