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Maine's Food System: *An Overview and Assessment*

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From an agrarian and seafaring past, Maine's food system has seen profound changes over the past two centuries. Grain, milk, livestock, fish, potatoes, vegetables and fruits adorned the family table and came from small, family farms. Today, most people in Maine don't know where their food comes from. Many are dependent on federal, state and local "emergency food systems" such as food stamps, food pantries, and childhood nutrition programs. Food-processing facilities, distribution systems, and value-added products are in short supply. Nevertheless, Maine has a diversity and abundance of food products. In this article, the authors provide a historical overview and current analysis of Maine's food system, highlighting encouraging trends and opportunities for the state. 🐞

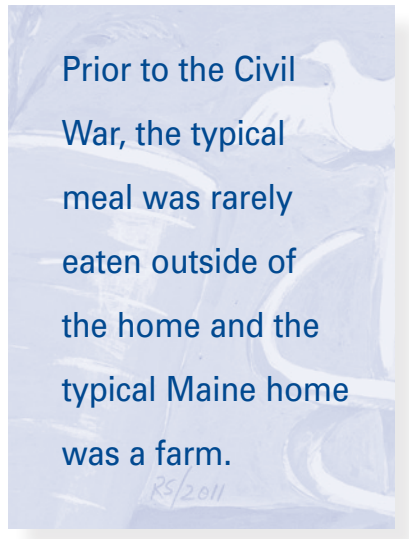
In the middle of 1979, largely as a result of soaring diesel fuel prices, independent truckers across the nation launched a strike. New Englanders saw the shelves of groceries and supermarkets largely empty of foodstuffs, fresh vegetables and fruits, and other commodities. Consequently, residents of the region soon learned several things. First, the vast majority of food consumed in the region came from somewhere else. Second, most of the food available to New Englanders came into the region on trucks. Third, the region's farms produced a surprisingly limited variety and quantity of food as they had come to specialize in ever fewer commodities, such as milk and eggs. It is not surprising, then, that among the first federal investigations into the causes and consequences of the truckers' strike was one led and conducted by a then recently elected member of the U.S. House of Representatives, Maine's Olympia Snowe (U.S. House of Representatives 1979). Maine people came to understand that the foods on the grocery shelves were all that was available!

How did this come about? For one thing, no region of the country is as dependent on imported food as New England, located at the end of the food pipeline, according to a June 15, 1979, article in *The New York Times* by Peter Kihss. Additionally other vulnerabilities existed—and persist to this day—that made Maine especially sensitive to any disruption in its food supply. To appreciate why this remains the case in Maine, it is necessary to understand that food itself is part of a larger system. Embedded within this system are many steps and processes, and to accurately assess the Maine food system, one must appreciate how food is raised, where it comes from, how it is turned into the products that we consume, how we acquire our food, and how we dispose of it. As with any system, such as transportation or health care, the food system has components, which necessarily flow together and interact. Seeing food as a system potentially allows public policy to address any “holes,” deficiencies, or market failures that might be corrected thus increasing the well-being of Maine people. The current predicament of the Maine food system was not always the case.

WHAT WE ATE, WHAT WE EAT¹

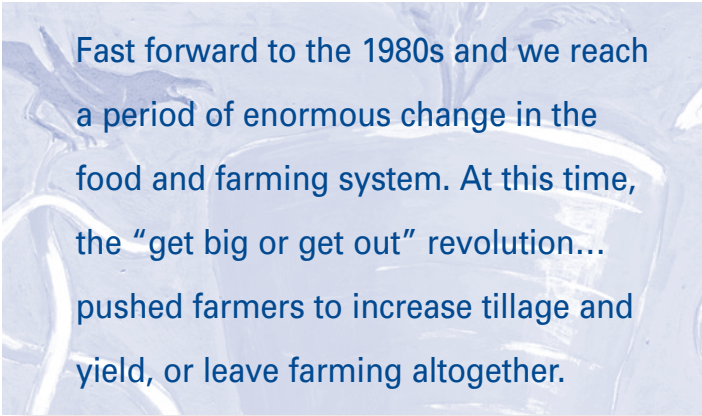
Prior to the Civil War, the typical meal was rarely eaten outside of the home and the typical Maine home was a farm. The Maine farm at this time was approximately 100 acres in size with about half of it in pasture. Maine farms produced more than five million bushels of grain, 3.5 million bushels of potatoes, and pastured more than one million live-stock animals for milk and meat (U.S. Census 1850). Virtually every household kept a milk cow, and the average farm kept seven. The Jersey cow, which would change the face of New England dairying, was a novel and rare breed. Almost every home had access to apple trees, and most farms had at least a modest orchard. The man in the household tended the farm, while the home and especially the kitchen was the focus of the woman's workday. She spent a significant portion of each day during the warmer months making butter and cheese. She cooked on a wood range and stored foods in crocks in a cellar. The Mason jar had barely been introduced, and the ice chest had not yet been widely adopted. Instead, drying, salting, smoking, and fermenting preserved most foods. All other foods were eaten on a seasonal basis.

In this period, dinner—the mid-day meal—was the main meal. The plate most likely held Indian corn, potatoes, or baked beans. Potatoes were fried in lard, tallow, or bacon fat, or boiled in stews. Corn was boiled as pudding or baked as the primary flour in breads. Apples, in various forms, were also a staple. They were made into cider—the ubiquitous Maine beverage—vinegar, molasses, or dried for sauces and pies. The slave trade and the ships sailing into New England ports made cane sugar a cheap and relatively abundant commodity in early New England, but maple sugar was always a plentiful staple (while maple syrup



Prior to the Civil War, the typical meal was rarely eaten outside of the home and the typical Maine home was a farm.

was a seasonal treat), and nearly every homestead had a beehive for honey and wax production. If it were warm outside, there were often leafy greens, peas, snap beans, or—a new favorite—tomatoes with the meal. When the weather was cold, Hubbard squash, turnips, beets, or fermented vegetables may have graced the plate. Meat was the central food on the plate for two or three meals a day for both the poor and the better off. Mutton was a Maine favorite, though beef, pork, and chicken were also common. Coastal areas and those on the big rivers were likely to have fish, and inland families often supplemented domestically raised meats with wild game. Cod, usually dried and salted, was a ubiquitous food throughout New England, though much of it was traded to the European market and the Caribbean. All of these foods came from the immediate land and community. Salt, tea, and leavening were the most frequent off-farm food purchases. While the variety of food consumed by Maine people was limited, ample amounts were generally available to all. Waste was essentially unknown, for any uneaten morsel was either included in the next meal in some form, or fed to a farm animal. The Maine food system—from field to fork and back again—was virtually all contained within the family homestead and the immediate area's lands and waters.



Fast forward to the 1980s and we reach a period of enormous change in the food and farming system. At this time, the “get big or get out” revolution... pushed farmers to increase tillage and yield, or leave farming altogether.

Jumping ahead several generations, by 1935 the Maine meal and the landscape supplying it had changed considerably. Although only about one-quarter of the state's land was in farms, the size of the average farm had increased to 120 acres. The number of people

actively engaged in farming had fallen dramatically from just a generation before (U.S. Census 1940). The introduction of cars and trucks and improved roads, together with the wide-scale use of tractors, an increase in the use of chemicals, and refrigeration, all brought significant changes to farms and homes in Maine. The opening of Aroostook County by rail and the development of chemical fungicides boosted potato production to the point that Maine was the largest producer in the nation, producing more than 50 million bushels annually. Oats were a significant crop, but all other grains grown in Maine declined markedly in the years between the wars (U.S. Census 1940). Other chemicals and fertilizers and use of hybrid seeds became commonplace in food production, and the canning of corn, beans, and blueberries was undertaken on an industrial scale (Frederic 2002). Almost every farming town had a canning facility, and many Maine people found wage work in the agribusiness sector. Raising broiler chickens and egg production became large-scale operations. Farmers were producing for middle men who sold these commodities in urban markets, thus extending the supply chain from Maine ever farther.

Most Maine cattle were milk cows and heifers, and larger dairy farms emerged to supply both local and distant markets. In 1935, the typical Mainer drank nearly a gallon and a half of milk each week (USDA 1941). Unlike in the past, Mainers began to purchase their milk at groceries or have it home-delivered—pasteurized, homogenized, and bottled! The quality of milk, along with other foodstuffs, was subject to review by evolving federal and state regulatory regimes.

With only one in five Maine people working or living on a farm, it was much more likely that the man sitting down at the table for dinner worked away from the home; he likely could not describe where the raw ingredients for the meal came from (U.S. Census 1940). The woman of the home may have had a kitchen garden and even a few laying hens and perhaps a pig. Overall, however, the majority of the foodstuffs she prepared came from a local shop. She prepared meals on a gas range and used an icebox to store perishables. She preserved food from her garden in canning jars. Yet, the home remained the primary location where food was eaten, as only one-third of Maine

people reported any expenditures for food eaten away from home (USDA 1941). Supper had become the most substantial meal of the day, as men and perhaps women worked away from the home during the mid-day. The meal itself was likely composed of the same basic foods that were consumed a few generations before. The one clear shift in the actual diet was away from the use of grain corn and toward cheaper grains produced in the West. Overall, this period saw a remarkable change in the local Maine food system: most of what was now consumed in Maine was increasingly produced, processed, and distributed from outside of the state and transported into Maine. This pattern would become even more exaggerated in the years ahead.

Fast forward to the 1980s and we reach a period of enormous change in the food and farming system. At this time, the “get big or get out” revolution of the Reagan years pushed farmers to increase tillage and yield, or leave farming altogether. Nationally the typical farm size doubled, and the diversity of crops produced on a single farm declined as specialization became the hallmark of much of American agriculture. At the same time, the number of American farmers also declined and the amount of off-farm inputs to farming rose dramatically, as did fuel use for increasingly large tractor fleets. In Maine, these same trends existed and prevailed until recently when we actually started seeing an increase in the number of farms. Currently, only seven percent of the overall acreage in Maine is devoted to agriculture, and less than two percent of the Maine workforce is directly engaged in farming (USDA NASS 2009).

Unlike in decades past, many of the meals Mainers currently consume are not eaten at home. Nearly half of all meal expenditures are accounted for in places other than the home (Bureau of Labor Statistics 2010). Little of the food on the Maine plate comes from within the state. This situation is pointedly made by the reality that in almost any community with a supermarket “one can find grapes from Chile, apples from New Zealand, oranges from Brazil, processed meats and cheeses from Europe and even ‘organic’ fruits and vegetables from Central America. Food in the United States travels an average of 1,300 miles and changes hands a half-dozen times before it is consumed” (Lacy

2000: 19). A 2006 study for the Maine Legislature noted “the ingredients for the average Maine meal travels [sic] 1900 miles from field to fork, which is 25% more than in 1980.... Maine currently produces only about 20% of its food needs” (Maine Department of Agriculture 2006: 9).

What, then, is on the typical Maine plate today? Essentially, we do not know. While there are clear trends in our food culture, which seem to be based on income as much as any other factor, there is a wide variation within these trends. Though chain restaurants have softened differences in regional food preferences, New England people still prefer red hot dogs with skins, beef over other meats, haddock and cod over tilapia and catfish, and white potatoes and McIntosh apples. In short, some longstanding and regional preferences persist (Lisa Fernandes, personal communication, 2010). Still we have a vast array of food options and possibilities in our diets now. What is clear is that more of our foods are processed, more of it is purchased in supermarkets and groceries, we are eating less and less at home, and the vast majority of food comes from places other than Maine and New England.

In terms of access and nutritional indicators, many Mainers are less healthy and more food insecure than ever before. More than 60 percent of Maine adults and 15 percent of Maine youth are overweight or obese, and 40 percent of the calories consumed by children and adolescents come from added fat and sugars (Maine Department of Agriculture 2008). The U.S. Department of Agriculture estimates that 15 percent of all Mainers are food insecure (Nord et al. 2010). For children, the Hunger in America 2010 report puts the numbers who are food insecure at approximately 21 percent, or one out of every five Maine children (Mabli et al. 2010).

WHAT FOODS DOES MAINE PRODUCE?

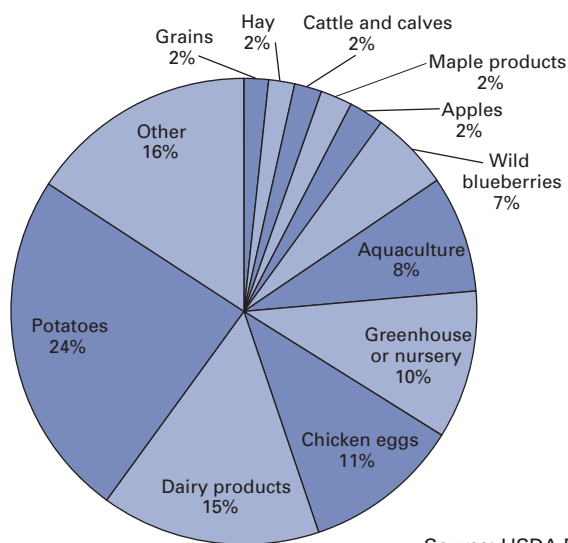
Maine food comes from both the land and the sea. Beyond its initial value, agriculture remains an important source of employment for Maine people, with slightly over 15 percent of all Maine jobs in 2002 tied to farm and farm-related employment (USDA USDA ERS 2002). As of 2007, the U.S. Department of Agriculture Census indicated that

TABLE 1: Farms in Maine by Size and Value of Sales

	2007	2002	1997
Total Number of Farms	8,136	7,196	7,404
Farms by size			
1 to 9 acres	1,046	918	773
10 to 49 acres	2,383	1,861	1,747
50 to 179 acres	3,019	2,506	2,802
180 to 499 acres	1,178	1,334	1,545
500 to 999 acres	330	393	393
1,000 to 1,999 acres	131	135	113
2,000 acres or more	49	49	31
Farms by value of sales			
Less than \$2,500	3,924	3,634	2,978
\$2,500 to \$4,999	838	777	978
\$5,000 to \$9,999	848	682	864
\$10,000 to \$24,999	949	727	914
\$25,000 to \$49,999	479	387	485
\$50,000 to \$99,999	328	310	400
\$100,000 to \$499,999	574	513	642
\$500,000 or more	198	166	143

Source: USDA ERS (2010a)

FIGURE 1: Maine's Top Commodities, 2009 (Percentage of total cash receipts)



Source: USDA ERS (2010a)

Maine had slightly more than 8,000 farms (Table 1)²; this is an increase over the previous 10-year period. It appears that the number of farms in the state has stabilized over the last several years; the average size of a Maine farm, however, has been decreasing. Nearly two-thirds of all Maine farms are less than 100 acres in size, and approximately 70 percent of all farms in Maine earn less than \$10,000 annually from farm sales (income is often supplemented by off-farm work). Table 1 shows a breakdown of Maine farms by size and value of sales.

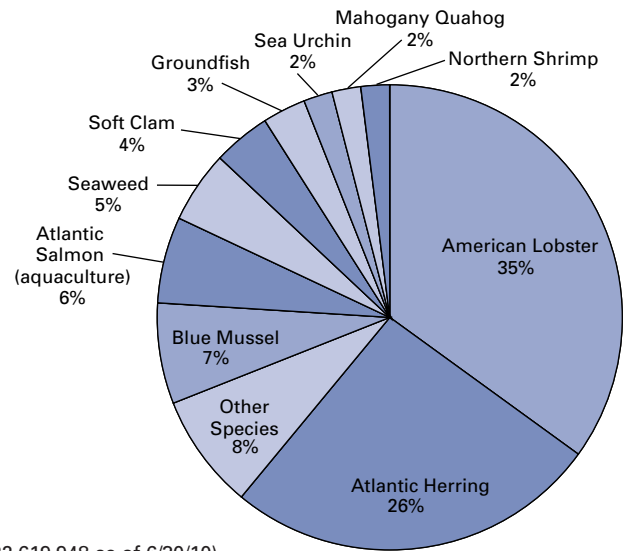
Even as crop acreage has declined, Maine continues to grow approximately 80 different crops. The top commodities in 2009 were potatoes, dairy products, chicken eggs, greenhouse/nursery products, aquaculture, wild blueberries, apples and maple products (Figure 1).

The single top-grossing agricultural commodity in Maine remains the potato. Maine ranks eighth in the nation for potato production, but has only about four percent of the market share (Planning Decisions, Inc. 2003). In 2009, 55,000 acres of potatoes were planted, with the great majority (68 percent) going to value-added processing such as french fries; about 13 percent to table stock; and the remainder for seed stock, starch, and fodder (NASS 2011). Potato production takes place on more than 475 farms, most of which are located in Aroostook County. Potatoes accounted for approximately 15 percent of all crop land in Maine and, according to the 1997 Census of Agriculture, accounted for just under a quarter of all agricultural receipts generated in the state (Maine Potato Board 2009).

Maine's second largest farm commodity sector is dairying. There are about 300 dairy farms, ranging in size from 10 to 1,700 cows, that produce nearly 600 million pounds of milk—or approximately 70 million gallons—per year (Governor's Task Force on the Sustainability of the Dairy Industry in Maine 2009). Dairy production accounts for 700,000 acres of fields and pastures throughout the state. The number of dairy farms has been in steady decline over the years, indicative of the long-term crisis in New England's dairy industry.

Seafood constitutes the fifth largest food commodity sector in Maine. More than 60 percent of

FIGURE 2: Preliminary Maine Commercial Landings, by Live Pounds, 2009



(Total: 222,619,948 as of 6/30/10)

Source: Data collected jointly by Maine Department of Marine Resources and National Marine Fisheries Service.

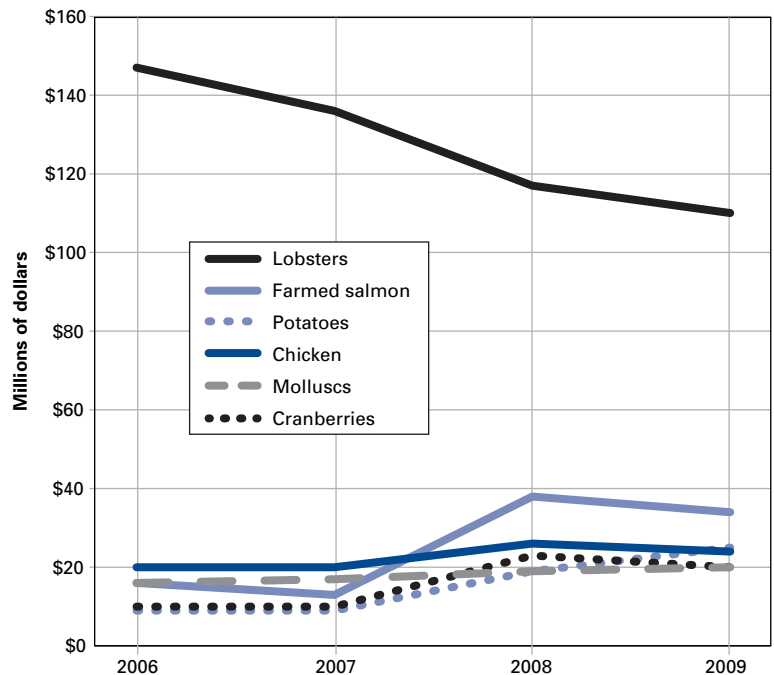
commercial landings in Maine are lobsters and herring, with mussels and, increasingly, farmed salmon and other fish also contributing to the catch (Figure 2).

Maine exports a number of food commodity items. Though declining relative to other export commodities, lobsters remain the largest food export from Maine by value. Several other commodities have shown a slight increase in the amount of exports they generate (Figure 3).

The current growth in interest in local Maine foods by consumers, distributors, institutions, and the commercially important tourism/restaurant sectors has been an important development for Maine agriculture. According to Michael Norton, an official at Maine’s largest supermarket chain, “local will become the way. Sourcing closer is good because it cuts transportation costs, but ultimately Hannaford chooses based on quality because that’s what consumers want” (personal communication, 2010). Mike Balzinelli, another supermarket executive, pointed out that “10 years ago we would do truckloads of corn out of Florida and Georgia; now the vast majority is local corn. Why? Local farms are working more with what merchandisers are looking for. They’re willing to grow what they know we’ll buy. Initially we asked farmers what they had to offer at the beginning of the season; now we talk ahead for the next season, about what to grow. Many local farmers sell to us year after year” (personal communication, 2010). Further, there has also been strong growth among Maine’s local organic producers, many of whom are small and seek to fill particular niches in the market. One recent Maine Department of Agriculture study notes that, “Maine is a regional leader in organic production and has the potential for substantial growth both within the State and throughout the Northeastern and Mid-Atlantic region” (Maine Department of Agriculture 2008: 8). Table 2 shows that over the last several years growth in this sector has been substantial.

As significant as the farm sector is to the state of Maine, it accounted for only 13 percent of the total \$3.35 billion in annual economic activity generated by the entire Maine food system in the 1990s. Both food retailing and food processing were far larger portions of the economic activity generated by the food system than farming (Grandee 2002). Since then, the farm portion of the overall Maine food system has continued

FIGURE 3: Total Maine Food Commodity Exports, 2006–2009 (Millions of Dollars)



Source: U.S. Census Bureau (2009)

TABLE 2: **Maine Organic Agriculture**

	2006	2007	2008
Number of certified operations	319	351	635
Crops (acres)	34,675	32,854	40,737
Pasture and rangeland (acres)	5,262	6,286	8,247
Total acres	39,937	39,140	48,984

Source: USDA ERS (2010a)

to decline as a percentage of the total. This is consistent with farm income statistics across the nation. As former Maine agricultural commissioner Stewart Smith has remarked, “this system also results in farmers being increasingly trivialized within the food and agricultural system” (2000: 1). (For additional discussion of the economic impact of Maine’s food system, see the article by Gabe, McConnon and Kersbergen, this issue.)

FOOD PROCESSING IN MAINE

When raw agricultural or fishery commodities are turned into end-products they are said to be processed. Processing is a value-added activity and occurs when, for example, grains are transformed into flour and bread, or raw lobster is turned into lobster carpaccio as Shucks Maine Lobster does. At one time, especially as it relates to vegetable and fruit canning, Maine had a robust processing sector. But that sector has declined sharply, with only two major canneries in operation, B&M Beans and Looks Gourmet Foods. As the study *A Food Policy for the State of Maine* has concluded, “the deterioration of Maine’s food processing infrastructure both for agricultural and marine products over the past twenty years has reduced our ability to add value to local foods” (Maine Department of Agriculture 2006: 9). And a recent report devoted to strengthening the once highly significant poultry industry concludes “the lack of available poultry processing appears to be the most significant barrier for Maine’s poultry producers” (PolicyEdge 2011: 2).

Perhaps the most contemporary example of this decline was the closing of the Stinson Seafood Plant in Prospect Harbor in the spring of 2010, the last sardine cannery in the United States. Approximately 130 jobs were lost when the plant closed. According to an article by David Sharp in the February 19, 2011, *Portland*

Press Herald, Live Lobster of Chelsea, Massachusetts, has purchased the plant from Bumble Bee Foods, LLC, with plans to process lobster once the plant has been renovated. Generally speaking seafood processing continues to be a small segment of the larger live seafood industry, though Linda Bean’s Perfect Maine Lobster and Sea Hag Seafood of St. George are two examples of firms seeking to process and market value-added lobster products (Schmitt 2009; Davis 2011). The lobster industry “offers tremendous potential for a high-value business,” assuming that the appropriate investments in management, innovation and marketing are made (Moseley Group 2009: 23).

The decline in Maine’s food-processing infrastructure is the result of many factors, but generally speaking, as food processing has become more industrialized and concentrated, local capacity has declined. The Maine Department of Agriculture licenses some 3,000 processing businesses (Maine Department of Agriculture 2008). In terms of sales, some of the largest-grossing processors in Maine are Stonewall Kitchen, Morse’s Sauerkraut & European Deli, and Cherryfield Foods. Among the largest processors in terms of employment are McCain Foods, B&M Foods, Jasper Wyman & Son, and Cherryfield Foods. In the area of animal slaughtering and processing, Pineland Farms is the largest both in terms of sales and employment, followed by Noon Family Sheep Farm, and Angostura International.

The dairy and creamery industry has four major Maine processors along with a number of smaller ones that produce ice cream and specialty cheeses (Governor’s Task Force on the Sustainability of the Dairy Industry in Maine 2009). According to an article by Sharon K. Mack in the March 1, 2009, *Bangor Daily News*, HP Hood, one of the larger processors of Maine organic milk under the label of Stonyfield Organic Milk, dropped some suppliers in northern and eastern Maine due to a perceived oversupply of raw milk. These 10 organic dairy farms joined with the Maine Farm Bureau and Maine Organic Farmers and Gardeners Association (MOFGA) to establish Maine’s Own Organic Milk Company (MOO Milk), a unique company also supported by the Maine Department of Agriculture. The milk is processed at Smiling Hill Farm, and distributed by Oakhurst Dairy and Crown

TABLE 3: Licensed Food Processors in Maine

	Total
Home Processor	641
Commercial Food Processor	490
Maple Syrup	257
Beverage Plant	226
Bakery	179
Cider /Juice Plant	36
Slaughterhouse	19
Food Salvage (Processor, Retail, Broker)	10
Custom Meat Processor	6
Food Salvage	4
Commercial Meat Processor	4
Smokehouse	1

Source: Maine Department of Agriculture, Division of Quality Assurance and Regulation

O’ Maine. The mission of the company is to ensure that organic farmers receive an equitable price for their milk, in part by keeping them part-owners of the firm (www.moomilkco.com). Hood’s initial dropping of the organic producers may well be indicative of a current softening in the organic milk market, which according to one recent study “has become a haven for smaller family-operated farms that could not, or would not, continue getting bigger” (Dalton et al. 2008: 19).

The one bright spot in Maine’s value-added food processing lies in the area of potatoes, where McCain Food, Penobscot Frozen Foods, Basic American, and Frito-Lay all purchase and process potatoes within the state (Maine Department of Agriculture 2008). The concern over the dwindling infrastructure and capacity for local food processing has led the Finance Authority of Maine (FAME) to initiate support for the financing of local firms in this sector (www.famemaine.com). The vast majority of the foods that are processed in Maine—better than 60 percent—are exported to domestic markets outside of the state. A 2002 study suggests that for every \$1,000 spent in the processing sector, \$1,698 is generated in the form of labor, supplies, and other inputs, including the commodity itself (Grandee 2002).

The list in Table 3 shows both the types of processing carried out and the number of businesses

engaged in a commodity’s processing. The largest single category is home-based food processors. Home-based food processing appears to be on the rise. Currently the predominant food commodities for licensed home-based processors are baked goods, jams and jellies, and fruits and vegetables. Table 4 shows the breakdown of home-based processors by type of product.

FOOD DISTRIBUTION

As Michael Rozyne, a national expert on food systems has put it, food “distribution is everything involved in physically getting product in front of the customer. The visible parts of distribution are the ones made of concrete, steel, and rubber: the trucks, warehouses, walk-in-cooler, stores, and kitchens. The less visible component is the set of relationships and structures that govern what products move where and how, and who decides” (Rozyne 2000: 1). Maine has witnessed a substantial growth in linking farmers and consumers through direct marketing efforts, such as community-supported agriculture (CSAs), farm stands, pick-your-own operations, farmers’ markets, home deliveries, and the all-important farmer-to-institution connection. Still the vast majority of people obtain their food at supermarkets and groceries with no direct awareness of, or connection to, where their food was produced.

The retail sector is of primary importance in understanding the food-distribution system. As of 2008, Maine had 1,325 food stores, composed of

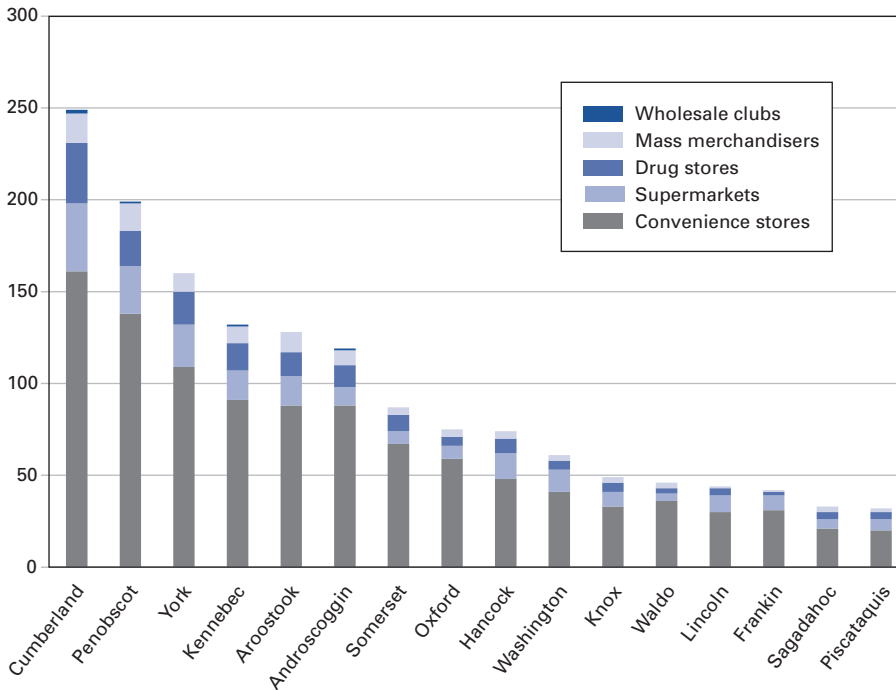
TABLE 4: Home-based Licensed Food Processors in Maine, by Product Type¹

Product Type	No. processors
Other Types	329
Cakes Pies	293
Bread	231
Jams Jellies	128
Canned, Processed	76
Fruits, Vegetables	75
Maple Syrup	18
Fruit Juices	7
Vacuum Packed Products	5
Meat raw	4
Meat Ready to Eat	4
Crabmeat	3
Seafood Ready to Eat	3
Water	3
Soft Drinks	2
Ice	1
Seafood raw	1

1. Some licensed home processors are counted several times as they produce several products.

Source: Maine Department of Agriculture, Division of Quality Assurance and Regulation

FIGURE 4: **Number of Retail Food Outlets, by County and Type**



Source: U.S. Census Bureau (2009)

1,061 convenience stores, 208 supermarkets, 139 drug stores that sold some foods, 97 mass merchandisers, five wholesale food clubs, and others. Food sales through these outlets amounted to \$3.74 billion (Nielsen Company 2010). In 2010, Maine's largest retailers were Hannaford Brothers, with 51 stores and 44 percent of the market share; Walmart Supercenters, with 12 outlets and an 18 percent market share; and SuperValue/Shaws Supermarkets, with 23 stores and an 18 percent market share. The state's 97 independently owned retailers make up much of the remaining market (Griffin Publishing Co. 2010). Figure 4 shows the distribution of food stores by county and type.

The retail food sector of the distribution system is fiercely competitive and has been characterized by a good deal of consolidation over the past several years. Walmart, which sold little or no food two decades ago, has emerged as the single largest retailer in the nation (Lapping 2005). As noted in a January 17, 2011, *New York Times* article by Stephanie Clifford, other firms, such as Target, dollar stores, and several major drug store chains, are also getting into the food-retailing

business at considerable levels.

Maine also has a significant wholesale distribution sector. There are different types of wholesalers to serve different industries. General-line wholesalers sell a wide variety of food products to retailers that lack transportation and storage capacity. General-line food service wholesalers, such as Sysco, sell both dry and perishable foods and foodstuffs to public and private institutions, such as hospitals and universities.

Supermarkets not connected to their own distribution centers and smaller grocery and convenience stores rely on wholesale distributors to supply their businesses. Associated Grocers of Maine, headquartered in Gardiner, was one such wholesaler. A cooperative that started in 1953 with just 44 members, it grew to support more than 300 stores throughout the state. Now facing dissolution, Associated Grocers' stores covered Maine from the Pine Tree Country Store in Kittery to St. John's Surefine in Fort Kent. Its recent demise now threatens the existence of many small-town groceries.

As in retailing, food wholesaling has also been subject to consolidation. According to the U.S. Census Bureau's 1997 Economic Census, in 1997 Maine had 378 wholesale traders of grocery and related products, with sales of \$1.9 billion, and 18 general-line grocery wholesalers, with sales of \$298 million. Ten years later, according to the 2007 Economic Census, the number of wholesale traders decreased to 296, with overall sales increasing to \$2.2 billion. The number of general-line grocery wholesalers dropped to eight, though sales grew to \$748 million. In 2010, the largest wholesalers in Maine were Hannaford Brothers/Distribution Center with a 46 percent market share, C&S Wholesale/Distribution Center with a 21 percent market share, and Walmart/Distribution Center with 19 percent (Griffin Publishing Co. 2010).

Maine public institutions—schools, universities, community colleges, correctional facilities, veteran's homes, mental health institutions, and others—rely on regional distributors, such as Sysco Systems and PFG Northcenter to meet their needs. Foodservice directors

often prefer working with just one or two distributors because of time constraints, food-safety concerns and other factors. The large regional distributors usually do not offer foods produced in Maine—with the exception of apples, milk, potatoes, eggs and seafood—because of concerns over supply availability, consistent packaging, and liability insurance certifications (Coburn 2004). The result is that a significant proportion of the food in Maine's institutions is not from local producers. However, many states, including Maine, are now requiring public institutions to purchase certain percentages of their food supply from local sources. A 2004 study indicated that among the most common Maine foods consumed in the state's institutions are fluid milk, seafood, potatoes, apples, wild blueberries, sweet corn, and other seasonal fruits and vegetables (Coburn 2004). Greater levels of institutional purchasing have the potential to change how regional distributors source their supplies and increase the amount of locally produced food in our public institutions, and the Maine diet in general.

With the rise of market demand for local organic foods, the Crown O' Maine Organic Cooperative (COMOC) emerged in 1996. Located in North Vassalboro, COMOC is supplied by organic farms and CSAs throughout Maine and supports natural food stores, organic food markets, buying clubs, and a number of restaurants, which are generally located in tourist areas and some of the state's larger communities (www.crownofmainecoop.com). Other Maine distributors of local foods include Farm Fresh Connection, Native Maine Produce & Specialty Foods, Luce's Meats, Maine Farm's Brand; Farm2Chef.com, Nova Foods, and The Turkey Farm.


Direct sales to consumers by farmers are also a growing trend in Maine. Two types of institutions are largely responsible for this: CSAs and farmers' markets. CSAs have been described as a form of "subscription marketing" (Bliss 2003: 13). There are several varieties of CSAs so they tend to be highly idiosyncratic in nature. What is common across all CSAs is the direct relationship between the farmer and the consumer. Customers enter into a relationship with a farmer to provide up-front financial support in exchange for shares of what is produced over the course of the growing season. By buying shares, local

consumers share in the risk that farmers must absorb. In return, shareholders are provided with a certain amount of fresh, high-quality produce, typically some or all of which might be grown organically. In a number of cases, consumers may not only provide capital for the farm operation, but may also participate in on-farm activities alongside the farmer, such as harvesting. Laura DeLind, one of the foremost students of CSAs, enumerates a number of the benefits of CSAs for farmers. These include a more secure market because the burden of risk is shared; the provision of investment capital in the farm; and access to, and connection with, consumers who appreciate the farmer's understanding and knowledge of the land and animals on the farm. Consumers find the following benefits: access to fresh foods typically harvested the day they are distributed; education about how foods are produced and how animals are raised; understanding how commodities might be used in new ways; and an active role in a local system that builds relationships, a sense of community, and preserves farmland by supporting farmers (DeLind 2010). Some Maine CSAs offer a wide range of products, while others, such as the "Out on the Limb Apple CSA" in Palermo, specialize in many varieties of one item.³ MOFGA's 2010 CSA directory lists more than 125 throughout the state.

After several decades of decline, farmers' markets have grown in popularity. Nationally the number of farmers' markets appears to have bottomed-out in 1970 at approximately 300. By 2000, aided in part by the federal Farmers-to-Consumers Direct Marketing Act of 1976 and then the WIC Farmers' Market Nutrition Act of 1992, the number increased to more than 3,000 (Brown 2001, 2002). According to a news release on the USDA's web site (www.usda.gov), by 2010 the number of farmers' markets has exploded to more than 6,100. Most markets are located on publicly owned land such as municipal parking lots or village greens, school premises or community centers.⁴ A common fixture of the summer-time townscape, increasingly markets are becoming year-round operations. Allison Brown's research on farmers' markets across the nation finds that they have some common characteristics. These include increasing linkage of farmers' markets with an urban population; high levels of repeat patronage by

consumers; patronage by those who live in or near communities with established markets; overwhelming participation by small-scale farmers who report that sales constitute a significant share of agricultural revenue; prices close to or slightly above those found in nearby supermarkets; substantial spillovers to local businesses from patrons of farmers' markets; and the overwhelming importance noted by patrons on direct social interaction with producers (Brown 2002).

The growth in the number of farmers' markets nationally is mirrored in Maine. In 2004, there were just 50 farmers' markets in Maine; by 2011, the number was almost double (www.mofga.org). A number of established farmers' markets, perhaps as many as 25, have added winter markets, and nearly all have expanded the variety of foods they offer to include meat products, grains, fish and other seafood. Aided by the Maine Department of Agriculture, MOFGA, the Maine Farmland Trust, and the By Land and By Sea project of the Eat Local Foods Coalition, participation in farmers' markets has been growing across the state. According to Lisa Fernandes, the Eat Local Foods Coalition has also been helping to develop a Maine food map and supporting Internet sales and buying clubs to stimulate more options for accessing local Maine food products (personal communication, 2010). Taken together, these and other efforts aim to shorten food-supply chains as a means to providing greater access to local food, higher incomes for participating farmers, and stimulating economic development (Otto and Varner 2005; Martinez et al. 2010).



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AN ALTERNATIVE FOOD-DISTRIBUTION SYSTEM

For Maine people who experience food insecurity or who would be food insecure were it not for a combination of federal, state, and local governmental programs and nonprofit agencies, an alternative food-distribution system has developed over time. According to the USDA Economic Research Service web site (www.ers.usda.gov), food security means that all members of a household can access foods, at all times, for an active, healthy life. Food security includes at a minimum two elements: (1) the ready availability of nutritionally adequate and safe foods, and (2) the assured ability to acquire acceptable foods in socially acceptable ways (i.e., without resorting to emergency food supplies, scavenging, stealing or other coping strategies). Food insecurity, on the other hand, means that a household's members are limited or uncertain about the availability of nutritionally adequate and safe foods or are limited or uncertain in their ability to acquire acceptable foods in socially acceptable ways.⁵ The system that has emerged to respond to food insecurity is often referred to as the "emergency food system"; it is largely hidden as is the hunger crisis it reflects.

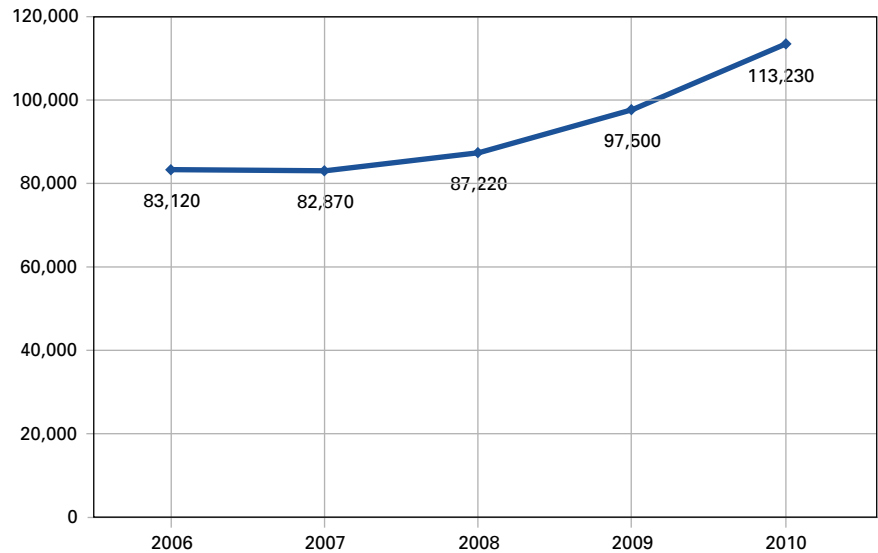
In 2008, the USDA ranked Maine as the ninth most food-insecure state in the nation. The state's ranking has grown worse over the past several decades (Nord et al. 2010).⁶ While there are a number of federally supported food and nutrition programs, the three largest are the Supplemental Nutrition Assistance Program (SNAP), better known as the Food Stamp Program, the National School Lunch Program, and the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Participation rates in these programs by Mainers have grown over the years. WIC, which is essentially a nutritional supplement program, is targeted to individual needs. Since 2008, the Maine Department of Health and Human Services (DHHS) has reported that the number of Maine families depending on SNAP has grown by 30 percent (gateway.maine.gov/dhhs-apps/dashboard/). Indeed, the state has the nation's highest rate of participation in SNAP (Karen L Curtis, personal communication, 2011). The previously noted DHHS web site shows

that in 2010 monthly participation in the program in Maine approached 27,000 participants. Figure 5 shows the growth in participation in the SNAP/Food Stamp Program in Maine since 2006.

Closely tied to these programs are the state's many community food pantries. The majority of these locally sponsored institutions are supplied by private and corporate donations and foods provided through the Good Shepherd Food-Bank, headquartered in Auburn. One of the earliest food banks in the country, Good Shepherd was founded in 1981 by JoAnn and Ray Pike and operated out of their apartment (Poppendieck 1998). Good Shepherd operates a network that includes more than 600 local pantries, soup kitchens, shelters, youth programs, and other facilities stretching across the entire state. They distribute approximately 12 million pounds of food annually to Maine people (Mabli et al. 2010). While depending largely on donations, Good Shepherd's Maine Farm, Dairy, and Seafood Initiative purchased more than 300,000 pounds of fresh produce in 2010 for distribution to its member pantries, thereby increasing the amount of these commodities available to their clientele. Food insecurity and programs to address it are discussed in more detail in this issue in the articles by Schumacher, Nischan and Simon, who provide an extensive review of federal programs, and Yellen, Swann and Schmidt, who look at the Maine picture.

Although food insecurity is fundamentally an issue of income and poverty, it also has spatial roots and implications. The concept of a "food desert" has emerged to help explain the relationship between incomes and place. A food desert is a place where residents have poor access to abundant, high-quality, fresh, and healthy foods (USDA ERS 2009). Food deserts may be urban or rural. An area within a city where access to healthy foods requires a walk of more than half a mile or a rural location that demands travel of 10 miles or more are considered deserts (Kaufman 1999; Larsen and Gilliland 2008; Sharkey 2009). A recent study of Cumberland County did not find such "deserts," but in urban Portland and in several of the county's outlying rural towns, areas of significant food

FIGURE 5: Food Supplement Program Annual Monthly Average Number of Cases, SFY 2006–2010



Source: Maine Department of Health and Human Services

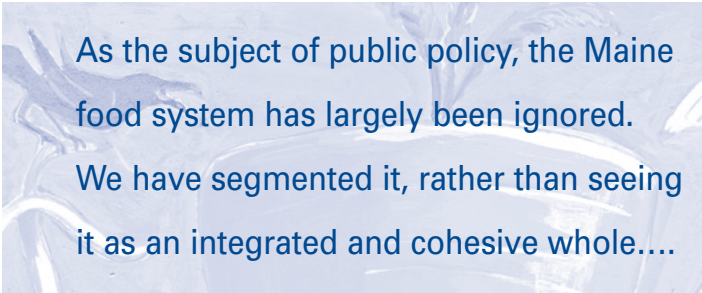
insecurity exist (Campaign to Promote Food Security 2010). Another assessment of rural Maine suggests that a perceived lack of access to a supermarket cannot necessarily be conflated to mean a lack of access to fresh and healthy foods (Hubley 2011). Nevertheless, rural Maine residents who lack access to predictable and reliable transportation face significant hurdles in acquiring fresh and healthy foods (Ver Ploeg 2010). Currently no accurate statewide assessment of food deserts exists.

FOOD WASTE

The amount of food that is wasted worldwide is staggering, perhaps as high as 40 percent (Godfray et al. 2010). Unlike the situation in developing countries, where most waste occurs on the farm, in transport, or in processing, food waste in countries such as the United States takes place at the foodservice and consumer levels. According to a news release from 2004 from the web site foodproductiondaily.com, a study conducted by the University of Arizona suggests that as much as one-half of all food in the U.S. goes to waste. No accurate picture exists of food waste in Maine.

Though much of Maine's waste is disposed of in landfills, the Maine State Planning Office and other

agencies seek to diminish the amount of waste by encouraging a number of waste-to-resource programs. For example, on-farm waste reduction occurs within the context of nutrient management planning (NMP), which is mandatory on many animal-based farms. It deals largely with manure handling and other residuals. In the processing sector, waste fry oil is increasingly being recycled and turned into biodiesel fuels that can be used in heating and cooling systems. For example, according to an article by J. Hemmerdinger in the December 12, 2010, *Portland Press Herald*, Barber Foods of Portland ships used fryer oil to Maine Standard Biofuels, which converts the liquid into biodiesel and returns it to Barber to burn for heat in the winter. By far, the food waste that is most conspicuous, however, is the food itself, both that left in the fields and that which is disposed of in garbage.



As the subject of public policy, the Maine food system has largely been ignored. We have segmented it, rather than seeing it as an integrated and cohesive whole....

Gleaning is an activity that reaches back to biblical times and perhaps beyond. The University of Maine Cooperative Extension operates the major gleaning program in the state. Through its Master Gardener program and the Maine Harvest for Hunger Initiative, volunteers glean commercial fields and community and home gardens. Started in 2000, the effort occurs in 15 counties of Maine and almost a million pounds of produce have been “rescued” and contributed to local pantries and soup kitchens (Barbara Murphy, personal communication, 2010). Whether damaged, of less than market grade, or simply left in the fields because of a market glut, the amount of food potentially available for gleaning remains huge, perhaps as a consequence of the logistical, labor, insurance, handling, transportation, and storage issues involved.

Composting represents the most common form of turning food waste into environmentally sound and

useful materials, especially as an amendment to build soil fertility and quality. According to Mark Hutchinson of UMaine Cooperative Extension, the demand for high-quality compost is strong throughout Maine and some local firms export compost throughout the country (personal communication, 2010). The University of Maine Cooperative Extension, in cooperation with the Maine Department of Agriculture, the Maine State Planning Office, and the Maine Department of Environmental Protection, operates the Maine Compost School located at the Highmoor Farm in Monmouth. Here workshops and short-courses are offered and research is conducted that support communities, farms, and firms with their organic waste-management operations. Through its certification program, the Maine Compost School has helped to create the infrastructure of a new industry based upon solving an important environmental problem while also helping to create new economic opportunities.

A case in point is provided by the experience of the Harraseeket Inn in Freeport, which has an extensive composting program. “The inn was producing 40 cubic yards of waste a week—and paying someone hundreds of dollars each month to haul it away.” Now “what started as a cost-cutting measure for the inn has blossomed into a closed-loop system: Food scraps are collected on-site and trucked to a local farm. There, they are turned into compost, which the farmer then applies to the fields where produce for the tavern is grown. Today the inn produces less than 8 cubic yards of waste a week, saves hundreds of dollars—and, in some ways, the environment” (Andresen 2009: 3). As the composting industry grows and matures and new firms are established—such as Organic Alchemy Composting of Portland, which works with the local restaurant and institutional sectors—the potential exists to remove even more food from the overall Maine waste stream exists.

CONCLUSION

Maine’s consumers have a vast array of food choices from all over the world, and we take advantage of them. From prepackaged and processed snacks and meals at grocery and convenience stores, to small-scale and locally grown organic vegetables

and meats at farmers' markets and CSAs, the variety is virtually endless. Yet while we know a great deal about the availability and scale of these goods, and we have data on the nutritional status of a few specific sectors of the state's population, overall we know little about the details of what Mainers are eating and why they consume what they do. Our food culture—where and how foodstuffs are sourced, how and by whom meals are prepared, and what ritual or ideals surround the consumption of our meals—remain relatively unstudied for the wider population of Maine. Likewise, we are coming to recognize that not everyone in Maine has access to the same choices that most Maine people have in their foods.

As the subject of public policy, the Maine food system has largely been ignored. We have segmented it, rather than seeing it as an integrated and cohesive whole, a “system.” The consequence is that various federal and state agencies have ownership over pieces of the food system, which leaves us with a highly fragmented, largely uncoordinated approach to one of life's most basic needs. Were the independent truckers' strike of 1979 to repeat itself, or another serious disruption occur, we would find ourselves in much the same place as before. And that is not an enviable position to be in. 🐟

ENDNOTES

1. Unless otherwise noted the information in this historical section draws from Russell (1976), Day (1954, 1963), and Stavely and Fitzgerald (2004).
2. A “farm” is defined by the USDA as “any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year” (USDA NASS 2009: viii).
3. The recently established Port Clyde Fresh Catch enterprise indicates that the CSA model has been extended beyond agriculture to include a fishery-based program.
4. For a listing of Maine's farmers' markets, see www.farmersmarketonline.com/fm/maine.htm or www.getrealmaine.com.
5. The definition used by the USDA essentially derives from Anderson (1990).
6. It is important to note that different agencies employ different statistical sampling methods that have led to some discrepancies in the size of households termed “food insecure.”

REFERENCES

- Anderson, Sue Ann (ed.). 1990. “Core Indicators of Nutritional State for Difficult-to-Sample Populations.” *Journal of Nutrition* 120: 1557–1600.
- Andresen, Kristen. 2009. “Pay Dirt.” *UMaine Today* (May/June). <http://umainetoday.umaine.edu/past-issues/volume-9-issue-3/article-1/> [Accessed April 20, 2011]
- Bliss, John. 2003. “Journey person Program: Helping New Farmers Learn and Network.” *Maine Organic Farmer & Gardener* 30(2): 13.
- Brown, Allison. 2001. “Counting Farmers Markets.” *Geographical Review* 91(4): 655–674.
- Brown, Allison. 2002. “Farmers' Markets Research, 1940–2000: An Inventory and Review.” *American Journal of Alternative Agriculture* 17(4): 167–176.
- Bureau of Labor Statistics. 2010. Consumer Expenditure Survey. <http://www.bls.gov/cex/> [Accessed April 18, 2011]
- Campaign to Promote Food Security in Cumberland County. 2010. Coalition Report, 2010. Campaign to Promote Food Security, Portland, ME.
- Coburn, K. M. 2004. Institutional Food Purchasing. A Report to the Joint Standing Committee on Agriculture, Conservation, and Forestry, Second Regular Session of the 121st Maine Legislature, Augusta.
- Dalton, Timothy J., Robert Parsons, Richard Kersbergen, Glenn Rogers, Dennis Kauppila, Lisa McCrory, Lisa A. Bragg and Qingbin Wang. 2008. A Comparative Analysis of Organic Dairy Farms in Maine and Vermont: Farm Financial Information from 2004 to 2006. *Maine Agricultural and Forest Experiment Station Bulletin* 851.

- Davis, Georgeanne. 2011. "New Lobster Processing Facility in St. George." *The Free Press* (January 27): 1-2.
- Day, Clarence A. 1954. *A History of Maine Agriculture, 1604-1860*. University of Maine Studies, Second Series No. 68.
- Day, Clarence A. 1963. *Farming in Maine, 1869-1940*. University of Maine Studies, Second Series No. 78.
- DeLind, Laura. 2010. "The ABCs of CSAs." Paper presented at Nourishing Traditions Conference, Detroit, MI.
- Frederic, Paul B. 2002. *Canning Gold: Northern New England's Sweet Corn Industry: A Historical Geography*. University Press of America, Lanham, MD.
- Gabe, Todd, James C. McConnon Jr. and Richard Kersbergen. 2011. "Economic Contribution of Maine's Food Industry." *Maine Policy Review* 20(1): 36-45.
- Godfray, H. Charles J., John R. Beddington, Ian R. Crute, Lawrence Haddad, David Lawrence, James F. Muir, Jules Pretty, Sherman Robinson, Sandy Thomas and Camilla Toulmin. 2010. "Food Security: The Challenge of Feeding 9 Billion People." *Science* 327: 812-818.
- Governor's Task Force on the Sustainability of the Dairy Industry in Maine. 2009. *2009 Dairy Task Force Final Report*. Maine Department of Agriculture, Food and Rural Resources, Augusta.
- Grandee, Jesse E. 2002. *Economic Impact of the Maine Food System and Farm Vitality Policy Implications*. Office of Policy and Legal Analysis, Maine State Legislature, Augusta.
- Griffin Publishing Co. 2010. *Griffin Report of Food Marketing* 44(10).
- Hubley, Teresa A. 2011. "Assessing the Proximity of Healthy Food Options and Food Deserts in a Rural Area of Maine." *Applied Geography*. 31: 1224-1231.
- Kaufman, Phil R. 1999. "Rural Poor Have Less Access to Supermarkets, Large Grocery Stores." *Rural Development Perspectives* 13(3): 19-26.
- Lacy, William B. 2000. "Empowering Communities through Public Work, Science, and Local Food Systems." *Rural Sociology* 65(19): 3-26.
- Lapping, Mark B. 2005. "Toward the Recovery of the Local in the Globalizing Food System." *Ethics, Place and Environment* 7(3): 141-150.
- Larsen, Kristian and Jason Gilliland. 2008. "Mapping the Evolution of 'Food Deserts' in a Canadian City: Supermarket Accessibility in London, Ontario, 1961-2005." *International Journal of Health Geographics* 7(16).
- Maine Department of Agriculture, Food and Rural Resources. 2006. *A Food Policy for the State of Maine*. Maine Department of Agriculture, Augusta.
- Maine Department of Agriculture, Food and Rural Resources. 2008. *The Agricultural Creative Economy: Needs, Opportunities, and Market Analysis*. Maine Department of Agriculture, Augusta.
- Maine Potato Board. 2009. *Maine Potatoes: A Review of the Industry*. Maine Potato Board, Presque Isle.
- Mabli, James, Rhoda Cohen, Frank Potter and Zhanyun Zhao. 2010. *Hunger in America, 2010: National Report Prepared for Feeding America*. Feeding America, Washington, DC.
- Martinez, Steve, Michael Hand, Michelle Da Pra, Susan Pollack, Katherine Ralston, Travis Smith, Stephen Vogel, Shellye Clark, Luanne Lohr, Sarah Low and Constance Newman. 2010. *Local Food Systems: Concepts, Impacts, and Issues*. ERR-97, USDA Economic Research Service. <http://www.ers.usda.gov/Publications/ERR97/ERR97.pdf> [Accessed May 15, 2011]
- Moseley Group. 2009. *Maine Lobster Industry Strategic Plan*. Prepared on behalf of the Governor's Task Force on the Economic Sustainability of Maine's Lobster Industry Maine Department of Marine Resources, Augusta.
- New England Agricultural Statistics Service (NASS). 2011. *Maine Potatoes, 2010 Crop, Acreage, Yield, Size, and Grade*. NASS, USDA, Concord, NH.
- Nielsen Company. 2010. *Nielsen Company Marketing Guidebook*. Nielsen Company, New York.
- Nord, Mark, Alisha Coleman-Jensen, Margaret Andrews and Steven Carlson. 2010. *Household Food Security in the United States*. ERR-108, USDA, Economic Research Service. <http://www.ers.usda.gov/Publications/ERR108/ERR108.pdf> [Accessed May 15, 2011]

- Otto, Daniel and Theresa Varner. 2005. Consumers, Vendors, and the Economic Importance of Iowa Farmers' Markets: An Economic Impact Survey Analysis. Leopold Center for Sustainable Agriculture, Iowa State University, Ames.
- Planning Decisions, Inc. 2003. A Study of the Maine Potato Industry: Its Economic Impact. Maine Potato Board, Presque Isle.
- PolicyEdge. 2011. Poultry Processing Needs in Maine. Report to the Maine Department of Agriculture, Food and Rural Resources. PolicyEdge, Portland, ME. <http://www.maine.gov/tools/whatsnew/attach.php?id=216851&an=1> [Accessed May 15, 2011]
- Poppendieck, Janet. 1998. Sweet Charity? Emergency Food and the End of Entitlement. Penguin Books, New York.
- Rozyne, Michael. 2000. Distribution—The Forgotten P. Northeast Sustainable Agriculture Working Group, Belchertown, MA.
- Russell, Howard. 1976. A Long, Deep Furrow: Three Centuries of Farming in New England. University Press of New England, Hanover, NH.
- Schmitt, Catherine. 2009. "Maine's Seafood Industry: From the Outside Looking In." *Maine Food and Lifestyle* 2: 56–58.
- Schumacher, Gus, Michel Nischan and Daniel Bowman Simon. 2011. "Healthy Food Access and Affordability: 'We Can Pay the Farmer or We Can Pay the Hospital.'" *Maine Policy Review* 20(1): 124–139.
- Sharkey, Joseph R. 2009. "Measuring Potential Access to Food Stores and Food-Service Places in Rural Areas in the U.S." *American Journal of Preventive Medicine*, 36(4 Suppl): S151–155.
- Smith, Stewart N. 2000. Niche vs. Mainstream Markets: The Role of Industrialization in the Agricultural Production Sector. Northeast Sustainability Agriculture Working Group, Belchertown, MA.
- Stavely, Keith and Kathleen Fitzgerald. 2004. *America's Founding Food: The Story of New England Cooking*. University of North Carolina Press, Chapel Hill.
- U.S. Census. 1850. Census of 1850, Statistics of Maine. U.S. Department of the Interior, Washington, DC.
- U.S. Census. 1940. Census of 1940, Statistics of Maine. U.S. Department of the Interior, Washington, DC.
- U.S. Census Bureau. 2009. Foreign Trade: State Exports for Maine. <http://www.census.gov/foreign-trade/statistics/state/data/me.html> [Accessed April 20, 2011]
- U.S. Department of Agriculture (USDA). 1941. Family Food Consumption and Dietary Levels. Consumer Purchase Study, Farm Series. USDA Miscellaneous Publication 405.
- U.S. Department of Agriculture, Economic Research Service (USDA ERS). 2002. Maine Farm and Farm-Related Employment, 2002. Data set: http://www.ers.usda.gov/Data/FarmandRelatedEmployment/ViewData.asp?GeoAreaPick=STAME_Maine&YearPick=2002 [Accessed April 20, 2011]
- U.S. Department of Agriculture, Economic Research Service (USDA ERS). 2009. Access to Affordable and Nutritious Foods: Measuring and Understanding Food Deserts and Their Consequences: A Report to Congress. USDA ERS, Washington, DC.
- U.S. Department of Agriculture, Economic Research Service (USDA ERS). 2010a. State Fact Sheets: Maine. <http://www.ers.usda.gov/statefacts/ME.htm#TCEC> [Accessed April 20, 2011]
- U.S. Department. of Agriculture, Economic Research Service (USDA ERS). 2010b. Maine Leading Commodities for Cash Receipts, 2009. Excel Spreadsheet. <http://www.ers.usda.gov/Data/FarmIncome/receipts/Rankings/States/Rk2009ME.xls> [Accessed April 20, 2011]
- U.S. Department of Agriculture, National Agricultural Statistics Service (USDA NASS). 2009. 2007 Census of Agriculture Maine State and County Data. USDA, NASS, Washington, DC. http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/Maine/mev1.pdf [Accessed April 20, 2011]
- U.S. House of Representatives, Committee on Small Business. 1979. Independent Truckers and the Fuel Crisis: Hearings of the Subcommittee on Energy, Environment, Safety and Research. 96th Cong.

Ver Ploeg, Michele 2010. "Access to Affordable, Nutritious Food is "Limited in 'Food Deserts.'" *Amber Waves* 8(1): 20-27. <http://www.ers.usda.gov/amberwaves/march10/features/FoodDeserts.htm> [Accessed April 20, 2011]

Yellen, Donna, Mark Swann and Elena Schmidt. 2011. "Hunger in Maine." *Maine Policy Review* 20(1): 140-150.



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