

III. The APCC Farmland Inventory

Development of the inventory of farming on Cape Cod proved to be a complex and difficult task for a number of reasons:

- The definition of farming differs between the federal and state governments.
- The federal government and local governments use different methods to count the number of farms and acres of farmlands.
- The federal government census is based on counties, not towns.
- Town assessors may use different land use codes to identify farms.
- The size of a parcel in an assessor's data table is not always the same as that captured through geocoding through a Geographic Information System.
- One parcel of land in an assessor's database may have multiple land use codes, some identifying farming activities, some that do not.
- The assessors' data indicate the size of a parcel that has an agricultural land use code; this is not the same as acres under cultivation or acres of active pastureland.
- Commercial farming activity may take place on a parcel that does not have an agricultural land use code.
- An agricultural land use code does not necessarily mean that a parcel is being actively farmed.
- Farmers may own or rent several parcels, sometimes in different towns.
- The number of farms, acres of farmlands and land under cultivation are not static.

For all of these reasons, the results presented here are to be considered estimates of the number of farms and acres of farms on Cape Cod.

A. Definitions of Farming and Farming Activities

The United States Department of Agriculture census center defines farming as: "Any operation selling at least \$1000 of agricultural commodities or that would have sold that amount of produce under normal circumstances. Where a commodity is defined as: grain and non-grain crops, vegetables, fruits, nuts, nursery plants, floriculture, Christmas trees, maple tree sap, animals, products from animals such as milk, eggs, etc. and any other agricultural production, excluding timber, forest and forest products."

The Commonwealth of Massachusetts General Law Ch. 128 Section 1(a) states: " 'Farming' or 'agriculture' shall include farming in all of its branches and the cultivation and tillage of the soil, dairying, the production, cultivation, growing and harvesting of any agricultural, aquacultural, floricultural or horticultural commodities, the growing and harvesting of forest products upon forest land, the raising of livestock including horses, the keeping of horses as a commercial enterprise, the keeping and raising of poultry, swine, cattle and other domesticated animals used for food purposes, bees, fur-bearing animals, and any forestry or lumbering operations, performed by a farmer, who is hereby defined as one engaged in agriculture or farming as herein defined, or on a farm as an incident to or in conjunction with such farming operations, including preparations for market, delivery to storage or to market or to carriers for transportation to market."

The federal government census includes only those farms that sell \$1000 or more of agricultural commodities in one year. Massachusetts does not include a monetary minimum in the general definition. Another difference between the federal and state definitions of farming is that the federal government excludes "timber, forest and forest products." Whereas the Massachusetts law includes "any forestry or lumbering operations."

Equine Species

The question of whether stabling horses or ponies constitute agriculture has been raised numerous times and has different answers. Related to that question is whether horse farms should be eligible for agricultural tax assessments and exemptions from regulation.

According to the American Farmland Trust “At one end of the spectrum are horse breeding operations where sales of horses (and semen) mean those facilities typically fall within the United States Department of Agriculture’s (USDA) definition of a farm—a place producing farm commodities having a market value of \$1,000 or more annually. At the other end of the spectrum are small stables that board horses and offer riding lessons. Most agricultural officials consider these operations “recreational,” and some have vigorously opposed efforts to extend agricultural status to them or allow them on easement-protected land.” The difference between the two is related to raising a product versus providing a service. The latter is not included in the USDA Census of Agriculture.

According to the American Farmland Trust, Massachusetts considers equine breeding operations to be an agricultural use. Boarding, riding and training may be ancillary activities only.

B. APCC Farmland Inventory Data Sources

USDA Census Data

The USDA has conducted an agricultural census of each county in the United States every five years since 1920. According to Amanda V. Pomicter of the National Agricultural Statistics Service, limited aquaculture statistics from the 5-year census of agriculture have been presented beginning in 1974. In 2005 the USDA conducted its second national Census of Aquaculture.

Although the USDA makes every effort to send the census to all entities that meet the federal definition of a farm (see above) and engages in follow up to increase the number of respondents, not all qualifying farmers receive the census and not all of those who receive the census respond. The response rate for the 2007 census was 85.2% compared with 88.0% for the 2002 census and 86.2% for the 1997 census.

The results of the USDA agriculture census do not reflect the information received from the census itself. Instead, the USDA uses statistical methods to adjust the census data in order to account for those who did not respond to the census and those who did not receive the census. Adjustments are made for each state. Table 3 shows the percent adjustments made for Massachusetts to account for those who did not receive or did not respond to the 2007 agricultural census.

Table 3. Percent adjustments to USDA 2007 census numbers in Massachusetts.

Census adjustments	Did not respond	Did not receive census
Massachusetts Farms		
Number of farms	16.28%	25.9%
Amount of acres	13.69%	15.01%
Amount of sales	9.93%	2.03%

The USDA census is based on counties instead of towns. It provides no information on the location of individual farm parcels. The census also omits any data that could be used to identify a particular farm. Thus, federal information was not used to determine the number or size of farms in the fifteen Cape towns, nor was it used to create maps of farmlands. Information from the census was used to provide information on different kinds of agricultural products as discussed later in this document.

Town Assessors' Data

The land use codes of the Commonwealth of Massachusetts describe activities that occur on parcels of land. Town assessors frequently update the land use determinations. Land use Code 6 and Code 7 refer to agriculture lands that have received financial incentives under state law (Chapters 61, 61A). Chapter 61 offers incentive to those owning 10 contiguous acres of harvestable forest lands to keep their land as forest. Chapter 61A offer incentives for farmers with five or more acres in agricultural production to retain the land in agriculture use. This law is discussed in Section VI of this report.

Code 6 Forest Land

- 601 Productive Forest

Code 7 Agriculture/ Horticultural Land

- 710 Cranberry Bog

- 711 Tobacco, Sod

- 712 Truck Crops - vegetables

- 713 Field Crops - hay, wheat, tillable forage cropland, etc.

- 714 Orchards - pears, apples, grape vineyards, etc.

- 715 Christmas Trees

- 716 Necessary Related Land-farm roads, ponds, land under farm buildings

- 717 Productive Woodland - woodlots

- 718 Pasture

- 719 Nurseries

- 72 Non-Productive Land

- 720 Wetland, scrub land, rock land

There are other land use codes in Massachusetts for agricultural land uses.

- 210 Non-productive agricultural accessory land not included in Ch. 61A

- 317 Farm Buildings

- 318 Commercial Greenhouses

- 393 Agricultural/Horticultural Land not included in Ch.61 A

- 806 Commercial Horseback Riding

- 815 Productive Woodlands

Town assessors' data were used to estimate the number of farms and acres of farm lands.

Other Sources of Information

In addition to information in the town assessors' databases, other sources were used to identify land used for agriculture. These sources provided a physical address, which was then used to extract the parcel information from the assessors' databases. These sources include:

- Southeastern Massachusetts Agricultural Partnership (SEMAP) Retail Farm Directory (www.semaponline.org)
- Edible Cape Cod Farm Resources page (www.ediblecommunities.com/capecod/)
- Barnstable County Green Industry Directory (www.mass.gov/agr/massgrown/capecod_green_industry_directory.pdf)
- Various newspaper articles and advertisements from regional sources such as but not limited to the Cape Cod Times, the Barnstable Patriot, and the Enterprise
- Cape Cod Cooperative Extension personnel
- Cape and Islands Farm Bureau members
- Town Agricultural Commission members

The above sources were also used to estimate the number of farms and acres of farmlands.

Although many Cape Cod residents partake in some form of farming, whether it is growing a few tomatoes, raising chickens or keeping bees, or stabling horses for pleasure, these activities of homeowners are not included in this inventory.

Aquaculture

Cultivation of marine and freshwater species is a major economic contributor to Cape Cod agriculture. Data on acreages of town shellfish grants in 2009 were obtained from the Massachusetts Division of Marine Fisheries and the Barnstable County Cooperative Extension.

Data Validation

The inventory was sent to various organizations and individuals to validate the findings. The Cape Cod Cooperative Extension, the Cape and Islands Farm Bureau and individuals from six town agricultural commissions are among those who reviewed the information in the inventory.

C. Number, Size and Kinds of Farms in Barnstable County

Definition of Farming for this Inventory

This inventory generally follows the Massachusetts definition of farming activities, meaning that forestry is included as an agricultural activity, but stabling of equine species for personal use is not. Property owners who raise livestock or crops for personal use are also not included.

Acres of Farmland

Agricultural land use codes in town assessors' data were the main source used to identify lands where farming activities may occur, with the exception of some retail operations taking place on land zoned residentially or otherwise. Information on retail agricultural activity came from the Southeastern Massachusetts Agricultural

Partnership, Cape Cod Buy Fresh Buy Local, Barnstable County Green Industry Directory, Cape Cod Cooperative Extension, Edible Cape Cod, Cape and Islands Farm Bureau, the Spinners Guild, stable permits, town agricultural commissions, the internet, and newspaper articles and advertisements. Retail outlets include those farms that utilize farm stands, farmers' markets and other outlets to sell vegetables, flowers, fruits, fibers and other crops or livestock. Data from the Massachusetts Department of Marine Fisheries were used to quantify the acres of aquaculture grants.

Farms that advertise their crops and livestock and farms that have a Chapter 61 or Chapter 61A designation (see Section VI, to qualify for this program, a farm must have gross sales of \$500 or more) can be assumed to be active farms. However, for some parcels in the inventory, the only indication of agriculture is an agricultural land use code. In other cases an agricultural land use code is misleading. For example, the largest farmland parcel on Cape Cod is under the state Agricultural Protection Restriction program, but has not been farmed for more than one decade.

The size of a parcel that has an agricultural land use code or is otherwise known to have farming activity is not the same as acres under cultivation. It was not possible to quantify acres under cultivation, so the acreage of farmland reported in this inventory is more accurately the sum of the acres of parcels upon which some farming activity takes place.

The land use codes in town assessors' databases apply to individual parcels. As one farmer may own more than one parcel, the assessors' databases do not explicitly provide information on the number of farms. For the purposes of this inventory, an individual, owning and/or controlling more than one parcel with land use codes relating to agriculture (or residentially or other zoned parcel identified as a farming enterprise) was considered to be one farmer or potential farmer and the individual parcel acreages were summed to come up with a total acreage for a single farm or single potential farm.

For all of the reasons stated above it is likely that this inventory overstates the number of active farms and active farming activity and is best considered to be an estimate of the number of farms and acres of agriculture based on the available current information.

Results: Acres of Farmland and Numbers of Farms

Our results identify about 4,875 acres of actual or potential farmland and shellfish grants in Barnstable County in 2010 (Table 4). By contrast, the 2007 federal census estimates 5,233 acres of farmland, including aquaculture in Barnstable County. As noted above, the federal census adjusts numbers to account for farmers who did not receive the census or did not respond to the census. Our inventory identifies 294 farms or potential farms in 15 towns (Table 5) on Cape Cod.

Table 4. Total acreage of agricultural land (APCC Inventory October 2010) and aquaculture grants in Barnstable County towns (data from the Massachusetts Division of Marine Fisheries 2009).

Town	Agriculture (Acres)	Aquaculture (Acres)	Total Acreage
Barnstable	978.17	154	1152.17
Bourne	681.25	0	681.25
Brewster	281.58	8	289.58
Chatham	37.78	4	41.78
Dennis	175.53	31	205.53
Eastham	7.78	20	28.78
Falmouth	617.94	38	641.94
Harwich	336.64	0	336.64
Mashpee	81.03	27	107.03
Orleans	62.12	26	87.12
Provincetown	3.26	8	11.26
Sandwich	693.33	0	693.33
Truro	85.29	0	85.29
Wellfleet	2.97	262	235.97
Yarmouth	224.60	27	251.60
Total	4269.27	605	4874.27

Table 5 shows that the average size of farms in the 15 towns ranges from about 1 acre to about 27 acres, with a Cape-wide average of 14 acres.

Table 5. Average size of farms in Cape Cod towns.

Town	# of Farms	Average Size (acres)
Barnstable	47	20.8
Bourne	25	27.3
Brewster	29	9.7
Chatham	7	5.4
Dennis	26	6.8
Eastham	3	2.6
Falmouth	52	11.9
Harwich	32	10.5
Mashpee	10	8.1
Orleans	15	4.1
Provincetown	3	1.1
Sandwich	26	26.7
Truro	7	12.2
Wellfleet	1	3.0
Yarmouth	11	20.4
Total	294	4269.27
Average size Cape Cod		14.5

The size of farmlands varies widely on Cape Cod from a low of 0.19 acres to one 228-acre parcel that is not being farmed today. As seen in Table 6, the greatest number of farms are one to five acres in size; the second largest category is farms in the five to ten acre category. About 44% of the farms on Cape Cod are less than five acres in size. The following section on kinds of farming activity provides additional information on the size of farms in different farm categories.

Table 6. Range of Farm Sizes on Cape Cod.

Size of Farm (Acres)	# of Farms	Acres
< or = to 1	42	28
>1 to 5	85	219
>5 to 10	67	467
>10 to 20	44	652
>20 to 30	22	521
>30 to 40	10	347
>40 to 50	4	176
>50 to 75	10	572
>75 to 100	3	276
>100 to 125	2	224
>125 to 150	4	558
> 200	1	228
Total	294	4269

Kinds of Farming Activity

For the purpose of this inventory the Massachusetts' definition of kinds of farming was used. Thus, forestry products and garden centers are included in addition to truck farms, pasture lands, raising of livestock, and other typical farming activities in the inventory.

Multiple kinds of farming activity can take place on a single farm. In cases where land is under Chapter 61A, the type of farming activity may be identified (pasture, orchard, nursery, cranberry bog, field crops), however, it was usually not possible to determine how many acres of any given parcel were devoted to a particular kind of crop or livestock. This inventory groups farming activities into the following categories.

General: This category includes lands that are zoned for agriculture use and lands that are zoned otherwise but that have been identified as being used for general commercial agriculture activities, such as truck farming and the raising of animals for food and fiber. This category also includes nurseries that are under Chapter 61 or 61A.

Commercial Stables: This category refers to those establishments that provide stables for equine species or riding opportunities for pay. Excluded are homeowners or property owners where equine species are stabled for private use, or where other species (rabbits, chickens, goats, sheep, etc) are stabled for private use.

Cranberry Bogs: This category includes cranberry bogs and also the necessary lands associated with cranberry bog cultivation.

Garden Centers, Greenhouses and Trees & Shrubs: Greenhouses and garden centers are commercial establishments that may sell vegetables, flowers, trees and shrubs, which may or may not be "grown" on the parcel. (Although these parcels have an agricultural land use code in the town assessor database, or advertize as retail farms, none of these are under the state Chapter 61 or 61A program. Some, but not all of the parcels in the trees and shrubs category are tree farms that are in the Chapter 61 or Chapter 61A program.)

Wood Products: This category includes forests that are used to produce lumber or wood. Tree farms are not included in this category.

Cranberry farming comprises the largest farming category on Cape Cod, followed by the general category. Figure 3 and Table 7 depict the number of farms and acres of farmlands in the different farming categories.

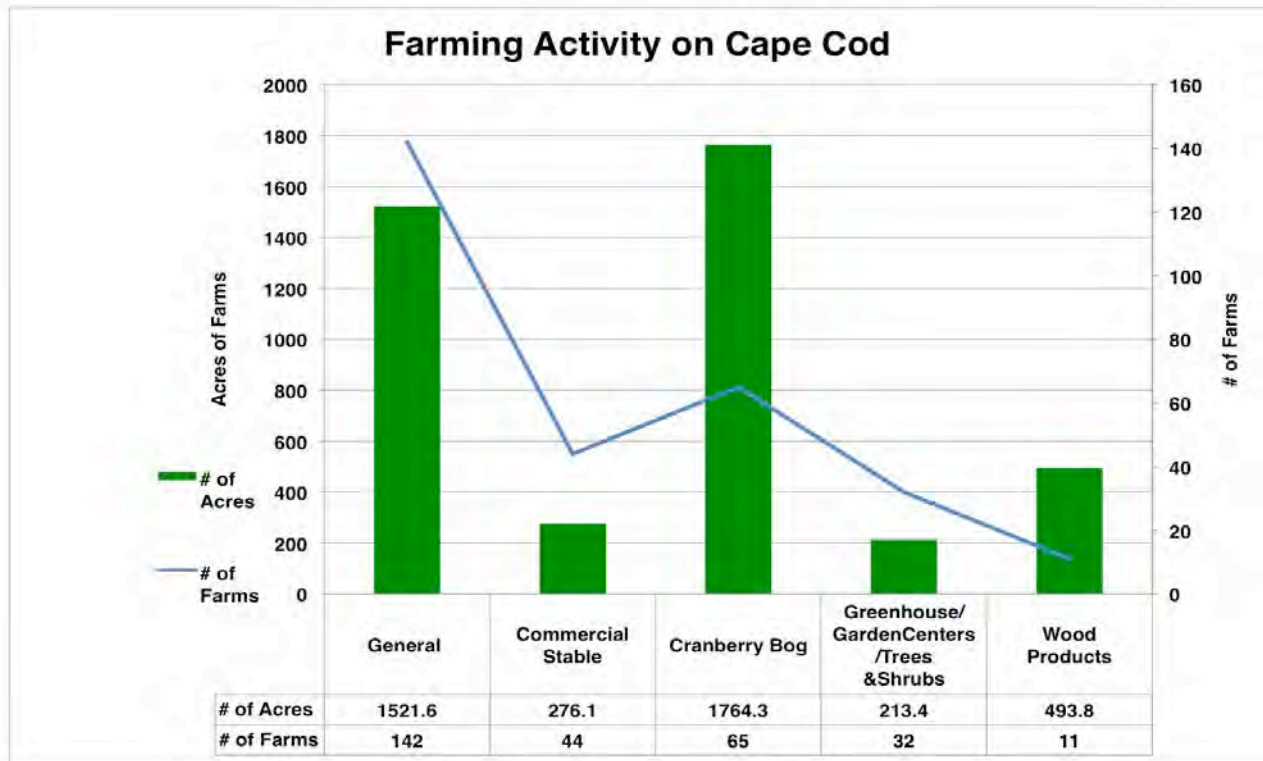


Figure 3. Number and Acres of Farms in Different Farming Categories.

Table 7. Farming Activity on Cape Cod (Numbers of Farms, Acres and Average Size).

Type of Farming Activity	# of Farms	# of Acres	Average
General (“Truck Farming, ” etc.)	142	1521.6	10.72
Commercial Stable	44	276.1	6.28
Cranberry Bog	65	1764.3	27.14
Greenhouse/Garden Centers/Trees & Shrubs	32	213.4	6.67
Wood Products	11	493.8	44.89
Total	294	4269	14.52

Agricultural Lands in State Incentive Programs

As will be described in detail in Section VI, some agricultural lands are in state farmland programs, either Chapters 61 and Chapter 61A or the Agriculture Protection Restriction (APR) program. These programs offer incentives to farmers to keep their lands in active agriculture use. As Figure 4 illustrates, approximately 60% of farm acreage on Cape Cod is under such programs. Almost 80% of cranberry bogs and almost all farms in the wood product category are included in Chapter 61A. Of the 294 farmers in our inventory 104 or about 35% participate in these programs.

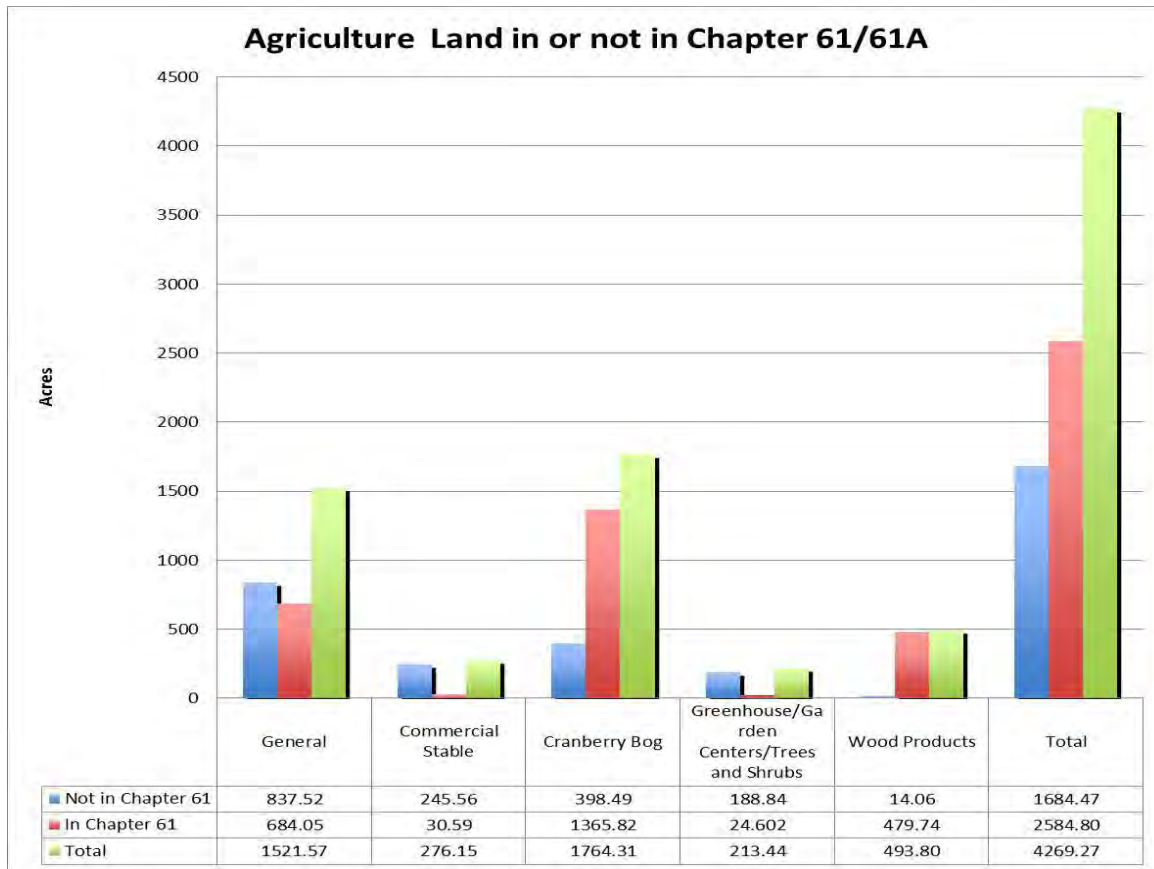


Figure 4: Kinds of farms and acres of farmland that are under state agriculture protection programs.

There were 605 acres of actively designated shellfish growing areas in Barnstable County in 2009, the last year for which data are available (Table 8). With 262 acres, the Town of Wellfleet has the highest amount of acreage devoted to aquaculture on Cape Cod. The shellfish grown by private growers in these grants include oysters, quahogs, soft shell clams, razor clams, and mussels. Between 2001 and 2009, the total acreage of shellfish growing areas has increased slightly across the Cape. Table 9 shows the number of license holders and licenses for 2006.

Table 8. Acres of shellfish grants on Cape Cod from 2001 through 2009 (data courtesy of the Massachusetts Department of Marine Fisheries).

Town	Aquacultural Acreage								
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Barnstable	171	174	174	174	174	163.7	178	167.17	154
Brewster	5.5	7	7	7	8	9.5	10	8.25	8
Chatham	4	4	4	4	4	4	4	4	4
Dennis	6	17	31	29	28	31	31	31	31
Eastham	17.25	21	21	18	54	26.7	21	17.7	20
Falmouth	22	22	22	22	21	24	24	37	38
Mashpee	27.35	26	26	26	26	26	26	25.5	27
Orleans	20.25	26	26	25	25	25	25	23.25	26
Provincetown	14	12	11	8	8	10	8	8	8
Truro	12								
Wellfleet	220.77	228	233	229	233	233.2	233	239.8	262
Yarmouth	29.75	30	30	27	27	27.5	27	27.25	27
Total	549.87	567	585	569	608	580.6	587	588.92	605

Table 9. Number of license holders and number of shellfish grant licenses in 11 Cape towns in 2006 (data courtesy of Massachusetts Department of Marine Fisheries).

Town	License Holders	Licenses	Acres
Barnstable	50	65	163.7
Brewster	9	9	9.5
Chatham	1	1	4.0
Dennis	29	29	31.0
Eastham	29	31	26.7
Falmouth	2	3	24.0
Mashpee	6	8	26.0
Orleans	17	18	25.0
Provincetown	7	7	10.0
Wellfleet	80	110	233.2
Yarmouth	4	5	27.5
Total	234	286	580.5

Farm Products

A large variety of farm products are grown on Cape Cod. Farmers' markets and roadside stands offer an increasingly diverse selection of vegetables, fruits, and flowers, as well as fibers, honey and other products. Each year also sees an increase in the number of farms offering eggs and livestock for sale. Tables 10 and 11 indicate the number of farms and the range of crops and livestock raised on Cape Cod according to the USDA 2007 agricultural census. The national census is meant to be anonymous. When publication of the amount of crop or livestock would lead to the identity of the farm, the national census omits that information.

Table 10. Crops raised in Barnstable County (data from the 2007 USDA National Agricultural Census). Data on the number of acres are omitted where such information would lead to the identification of a particular farm.

Product	# of Farms	# of Acres
Asparagus	1	
Beans, snap	16	6
Beets	7	3
Broccoli	5	2
Carrots	8	3
Celery	2	
Cucumbers and pickles	5	
Eggplant	4	
Garlic	1	
Herbs, fresh cut	2	
Kale	1	
Lettuce	8	4
Onions, green	2	
Onions, dry	1	

Product	# of Farms	# of Acres
Peas (not snow or sugar)	2	
Peppers, bell	9	3
Peppers, other		6
Potatoes	12	4
Pumpkins	4	6
Radishes	1	
Squash, all	6	1
Corn, sweet	3	
Sweet potatoes	1	
Tomatoes	26	14
Watermelons	1	
Vegetables, other	9	11
Apples	3	
Apricots	1	
Grapes	5	
Peaches	2	
Pears	1	
Plums and prunes	3	1
Nuts	1	
Other orchard products	1	
Berries	91	1127
Blackberries	2	
Blueberries, tame	28	41
Blueberries, wild	6	
Cranberries	54	1071
Raspberries	14	5
Strawberries	7	
Berries, other	1	

Table 11. Livestock in Barnstable County (data from the 2007 USDA National Agricultural Census on livestock). Data on the number of animals are omitted where such information would lead to the identification of a particular farm.

Livestock	# of Farms	# of Animals
Cattle	16	32
beef	6	
milk	3	
Hogs	14	
Sheep and Lambs	29	64
Laying hens	57	1520
Broilers and other meat	3	
Pullets to replace layers	11	215
Turkeys	5	
Ducks	32	
Geese	11	47
Quail	4	212
Other Poultry	10	47
Horses	69	656
Goats	35	126
milking goats	7	29
angora	8	
Mules, burrows and donkeys	15	33
Rabbits	20	49
Llamas	2	

Shellfish species actively grown in Cape waters include quohogs, oysters and soft shelled clams.

D: Location of Farms and of Prime Agricultural Soils

Location of Farm Parcels on Cape Cod

GIS data from the state and towns were used to construct maps illustrating the parcels of land upon which agriculture activity takes place. As shown in Figures 5 and 6, all towns on Cape Cod have some agriculture land.



Figure 5. Locations of farms on the western half of Cape Cod.



Figure 6. Locations of farms on the eastern half of Cape Cod.

Prime Agricultural Soils on Cape Cod

The USDA defines prime farmland in the Barnstable County Interim Soils Report issued in 1987 as: “Land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to produce a sustained high yield of crops while using acceptable farming methods. Prime farmland produces the highest yields and requires minimal amounts of energy and economic resources, and farming it results in the least damage to the environment.”

Prime agricultural soils may consist of one or a mixture of the following:

- Amostown sandy loam, 0 to 5% slopes
- Belgrade silt loam, 3 to 8% slopes
- Boxford silt loam, 0 to 3% slopes
- Deerfield loamy fine sand, 0 to 5% slopes
- Enfield silt loam, 0 to 3% slopes
- Hinesburg sandy loam, 0 to 3% slopes
- Hinesburg sandy loam, 3 to 8% slopes
- Merrimac sandy loam, 0 to 3% slopes
- Merrimac sandy loam, 3 to 8% slopes
- Nantucket sandy loam, 3 to 8% slopes
- Sudbury fine sandy loam, 0 to 3% slopes
- Walpole sandy loam, 0 to 3% slopes

State classified prime agricultural soils are very unevenly distributed on Cape Cod as seen in Figure 7, with most of the prime soils located on the upper Cape and much of that within the borders of the Massachusetts Military Reservation.



Figure 7. Prime agricultural soils on Cape Cod.

Farms and Prime Soil

Over much of the past half century, residential subdivisions have replaced what was agricultural land on Cape Cod. These flat acres were arguably the least expensive land to subdivide into house lots. These lands also often were those with the best soils for agriculture. The agricultural history of some of these places is now apparent only in the name of the subdivision, names such as “Old Farm Estates” or “Farmer’s Lane.”

As a parcel of land may include parts that are on prime soils and parts that are not, the information in this inventory is based on acreages on prime/not prime soil, instead of parcels or farms. Most farms on Cape Cod are not located on prime soils. Our analysis shows about 13% of farms are on prime soils (570 acres) and about 87% (3,700 acres) are not on prime soils. Figure 8 illustrates the acreage of farms on or not on prime soils in the 15 Cape towns.

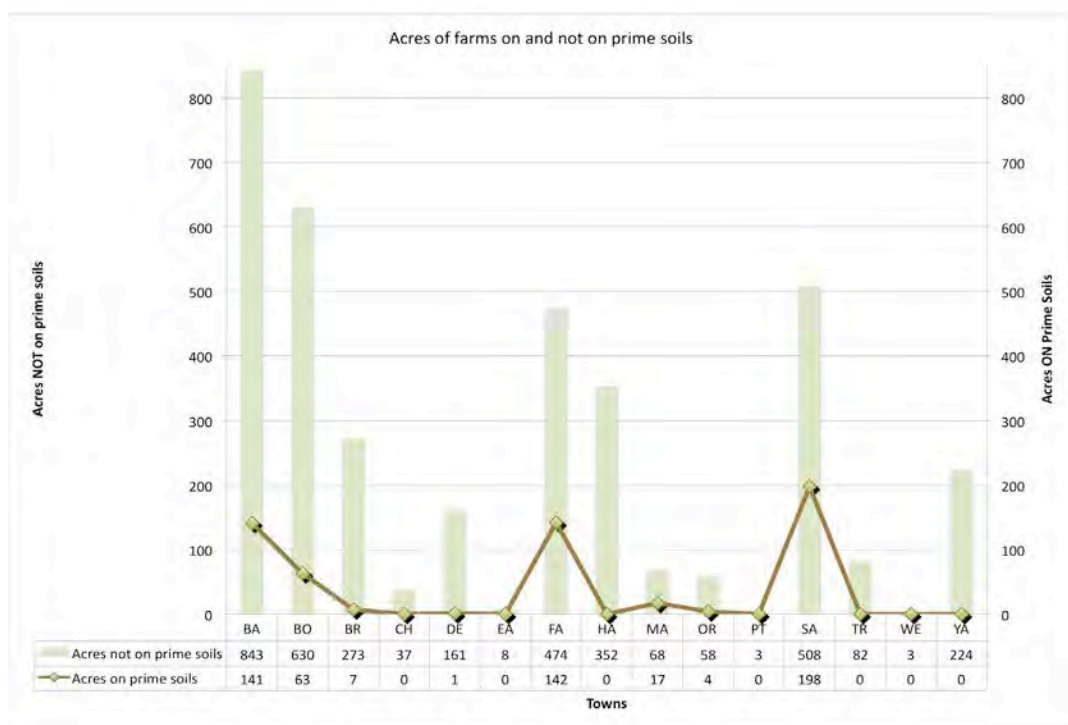


Figure 8. Acres of farms on or not on prime soils.

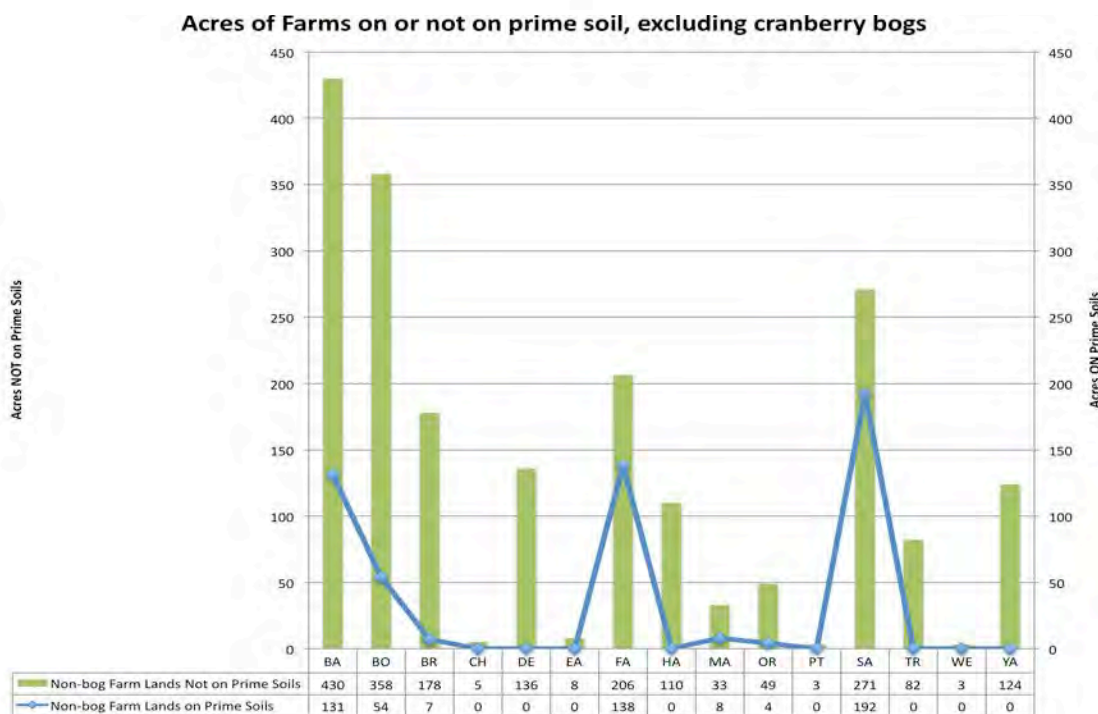


Figure 9. Acres of farms on or not on prime soils excluding cranberry bogs.

Cranberry bogs compromise approximately one-half of Cape Cod farms. Their cultivation requires sand and sandy soils, rather than prime agricultural soil. As figure 9 shows, even when cranberry bogs are eliminated, only 21% of agricultural activity takes place on prime soils on Cape Cod.

Figures 10 through 18 show the locations of farms that have some acreage on prime soils and the farms that have no acreage on prime soil in Barnstable, Bourne, Brewster, Chatham, Dennis, Falmouth, Mashpee, Orleans and Sandwich. The other five towns have either very little, or no prime agricultural soils and no farms on prime agricultural soils.

As soils can be amended to produce abundant healthy crops, prime agricultural soils are not a prerequisite to farming activity. However, they are by definition highly suitable to agricultural activity and are very valuable resource, which should not be squandered. In fact, the state takes the existence of prime agricultural soils into consideration when granting a farm entry into the state Agricultural Protection Restriction Program. This program is described in Section VI of this report.

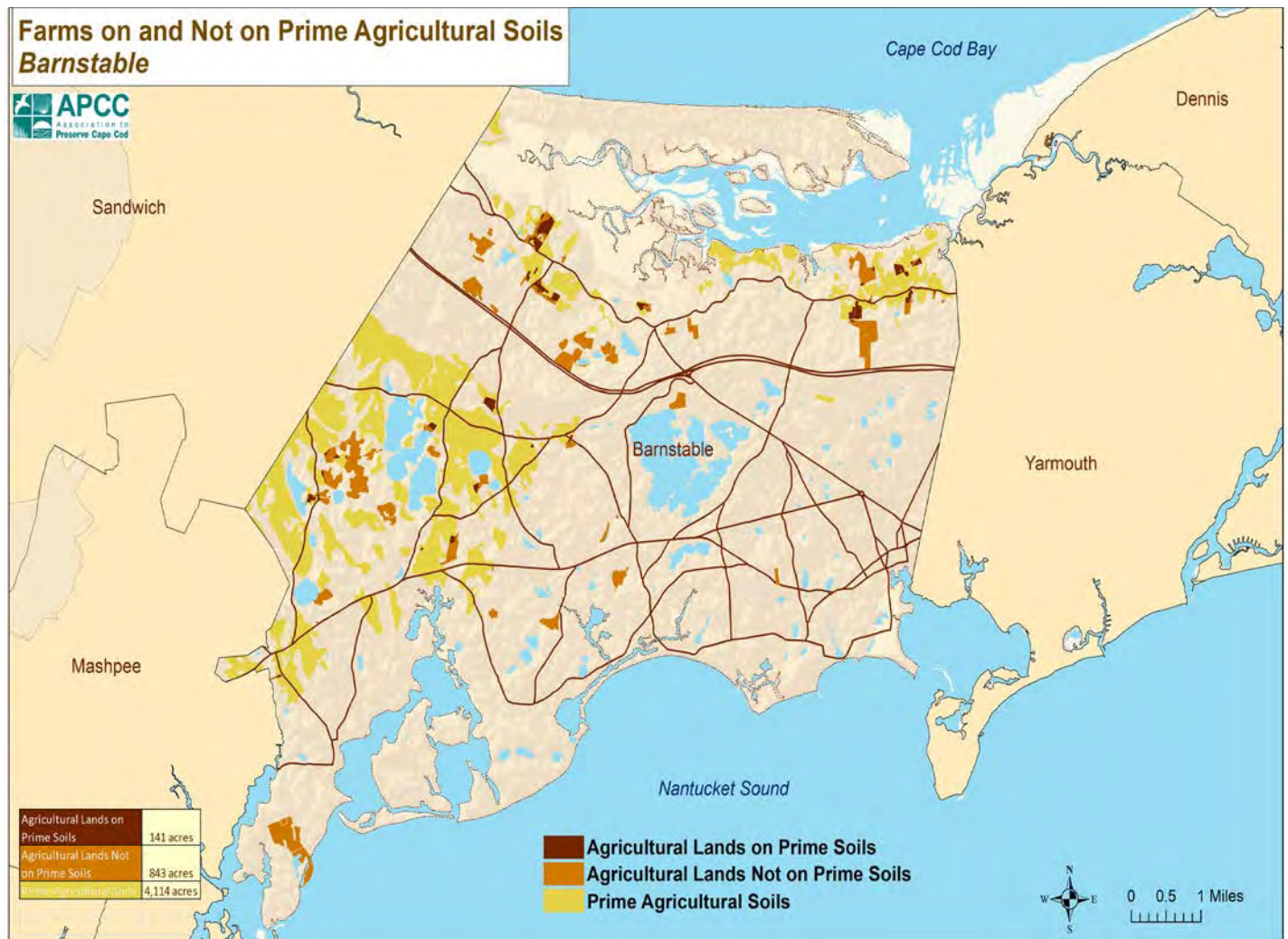


Figure 10. Farms on and not on prime agricultural soils, Barnstable.

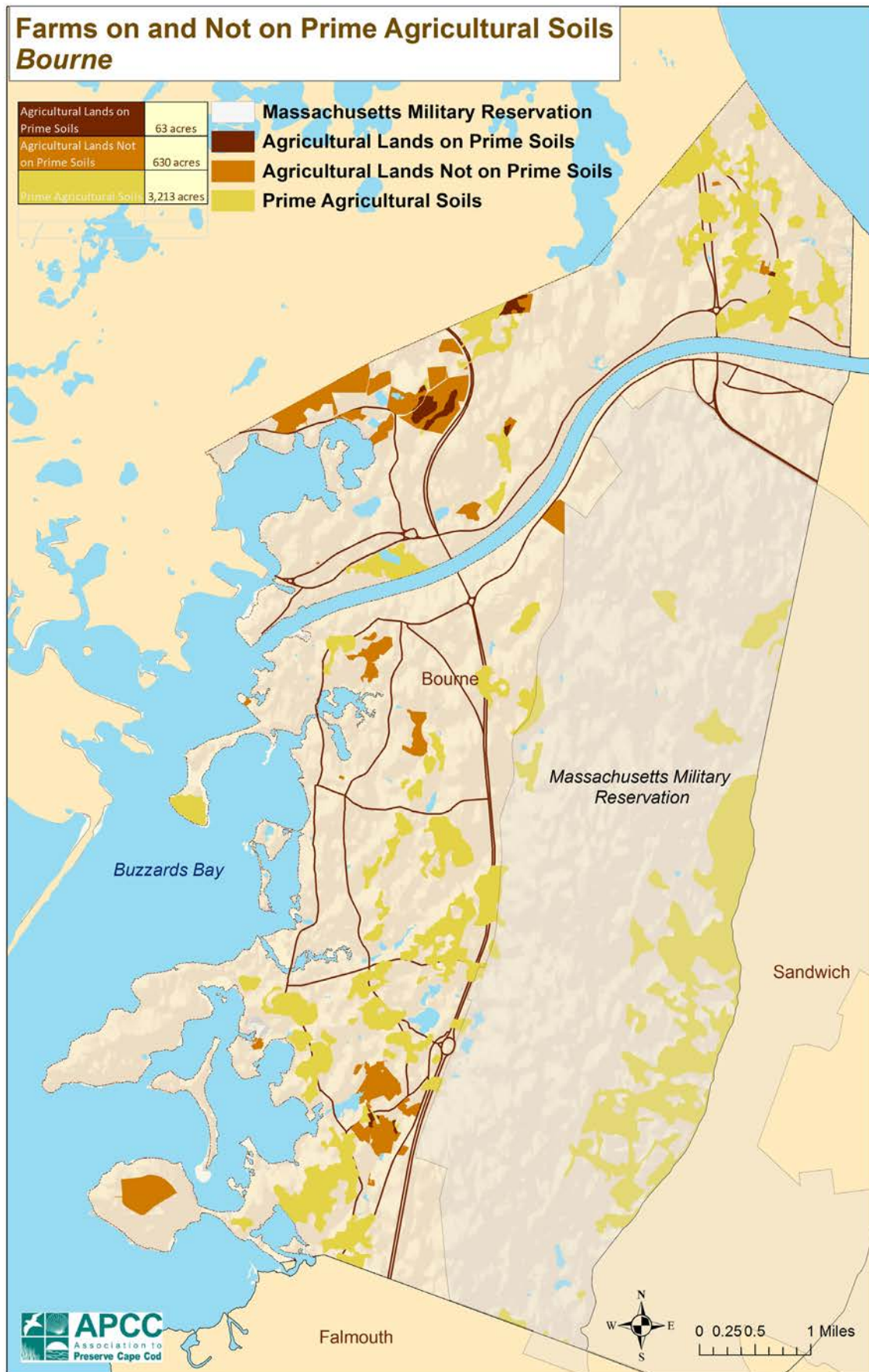


Figure 11. Farms on and not on prime agricultural soils, Bourne.

Figure 12. Farms on and not on prime agricultural soils, Brewster.

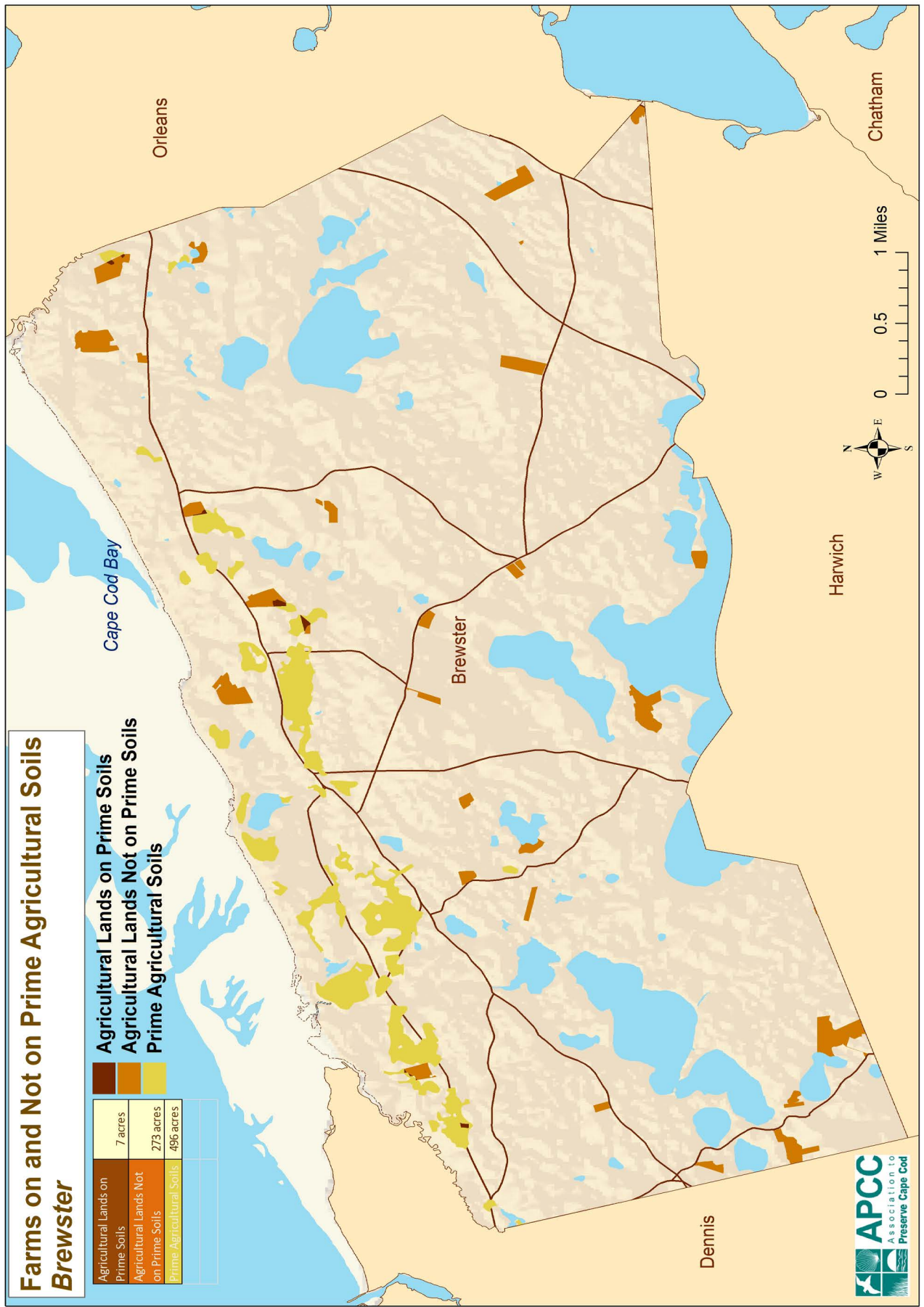




Figure 13. Farms on and not on prime agricultural soils, Chatham.

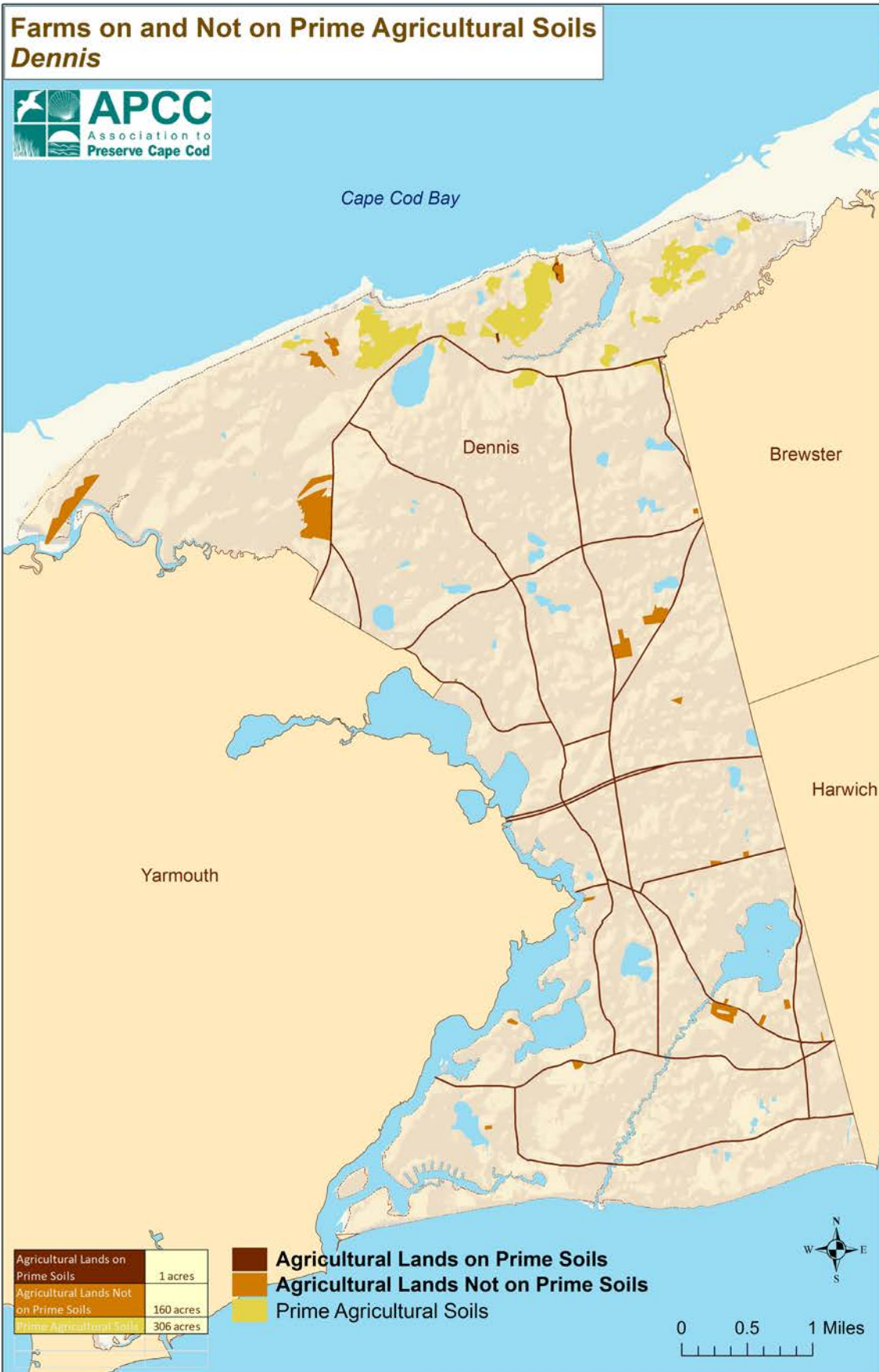


Figure 14. Farms on and not on prime agricultural soils, Dennis.



Figure 15. Farms on and not on prime agricultural soils, Falmouth.



Figure 16. Farms on and not on prime agricultural soils, Mashpee.

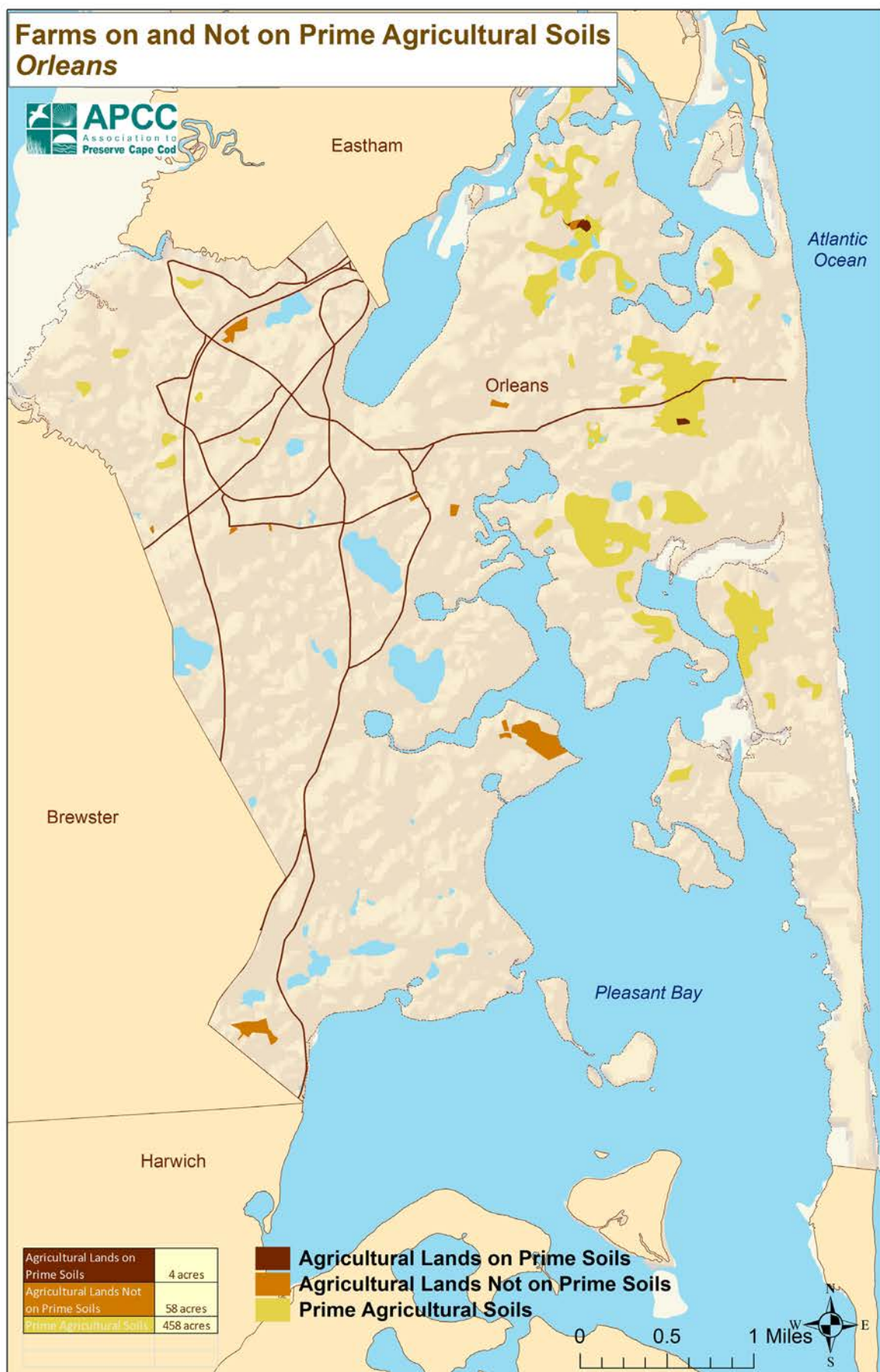


Figure 17. Farms on and not on prime agricultural soils, Orleans.

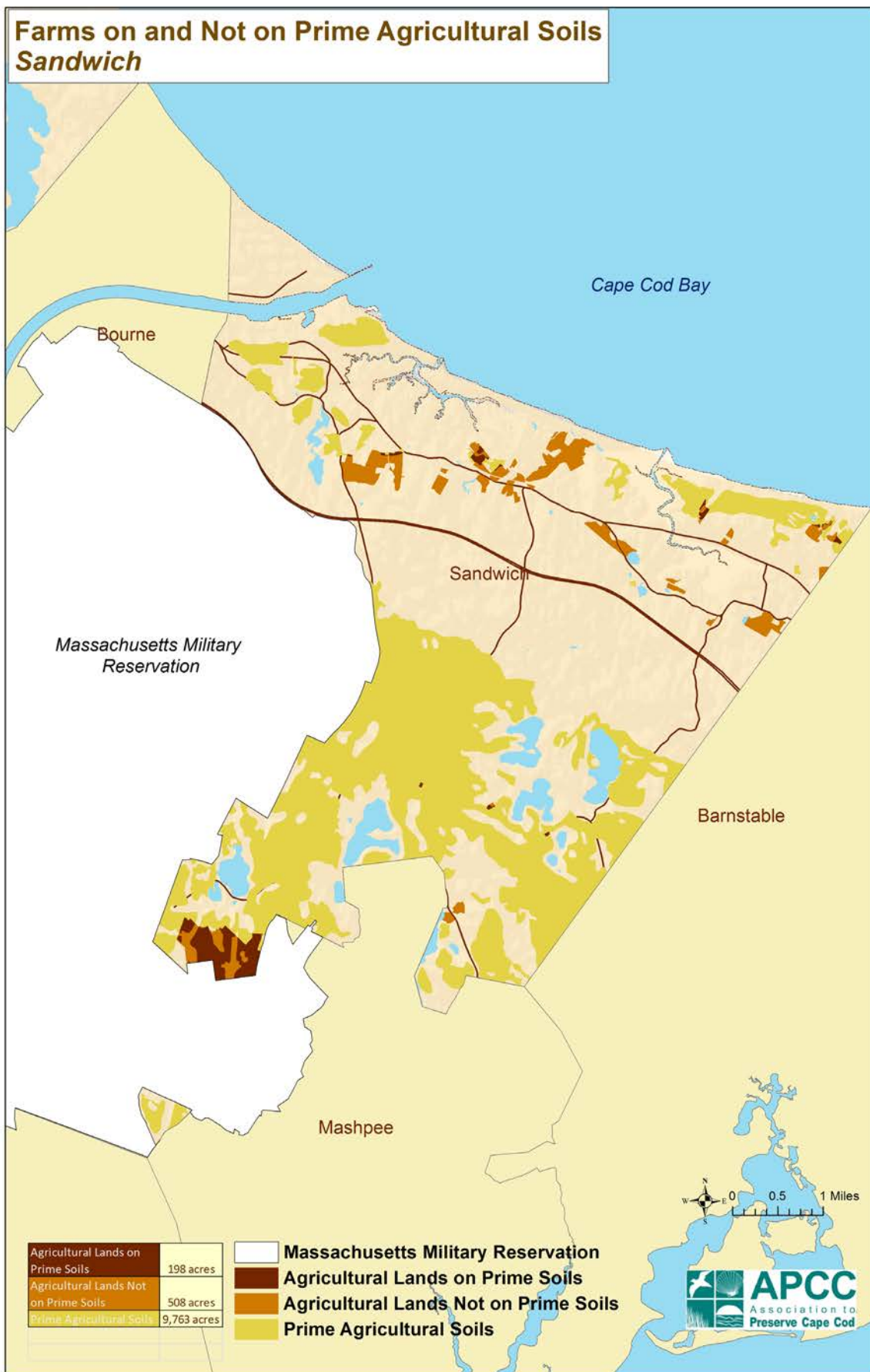


Figure 18. Farms on and not on prime agricultural soils, Sandwich.

Developable land on prime soils

For the purpose of this report, developable land on Cape Cod includes residential, commercial or industrial property that is developable, but not yet developed, or underdeveloped property. An example of underdeveloped land could be a 10-acre parcel with one house on it in a one-house/acre residential zoning district. It could also be a commercial property with structures, setbacks and parking less than the underlying zoning allows.

This analysis of developable land on prime soil includes undeveloped residential land of any size and underdeveloped residential land of five acres or larger. It also includes undeveloped commercial and industrial land. Underdeveloped commercial and industrial lands were excluded as it was beyond the scope of this effort to undertake the rigorous analysis necessary to assess the amount of additional development allowable under zoning on underdeveloped commercial and industrial properties.

Based on the criteria established in the previous paragraph, our analysis reveals a little less than 3,000 acres of prime soil on Cape Cod are undeveloped or underdeveloped residentially-zoned land (Figure 19). Of this about 2/3 is undeveloped private land on prime soil and about 1/3 is underdeveloped residential land on prime soil. As Figure 19 shows, nine towns on Cape Cod have developable land on prime soils. Most prime agricultural soils occur on the upper Cape into the town of Barnstable and most of the developable land on prime soils is also found in this area of Cape Cod.

Current Farming Activity and Future Prospects

Further analysis reveals that the majority of this developable land on prime soils is in small parcels. The following figures (Figure 20-23) illustrate this finding, showing the range of sizes of developable land on prime soils in Barnstable, Brewster, Falmouth and Sandwich.

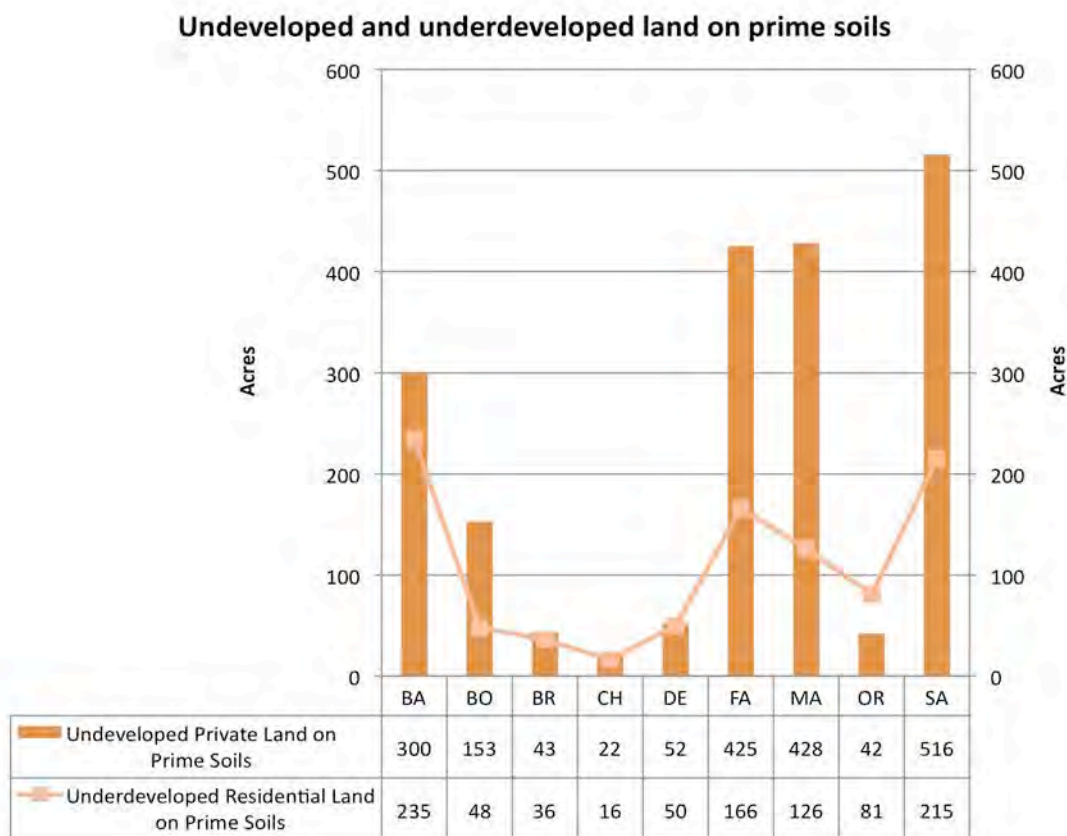


Figure 19. Undeveloped private land and underdeveloped residential land on prime soils.

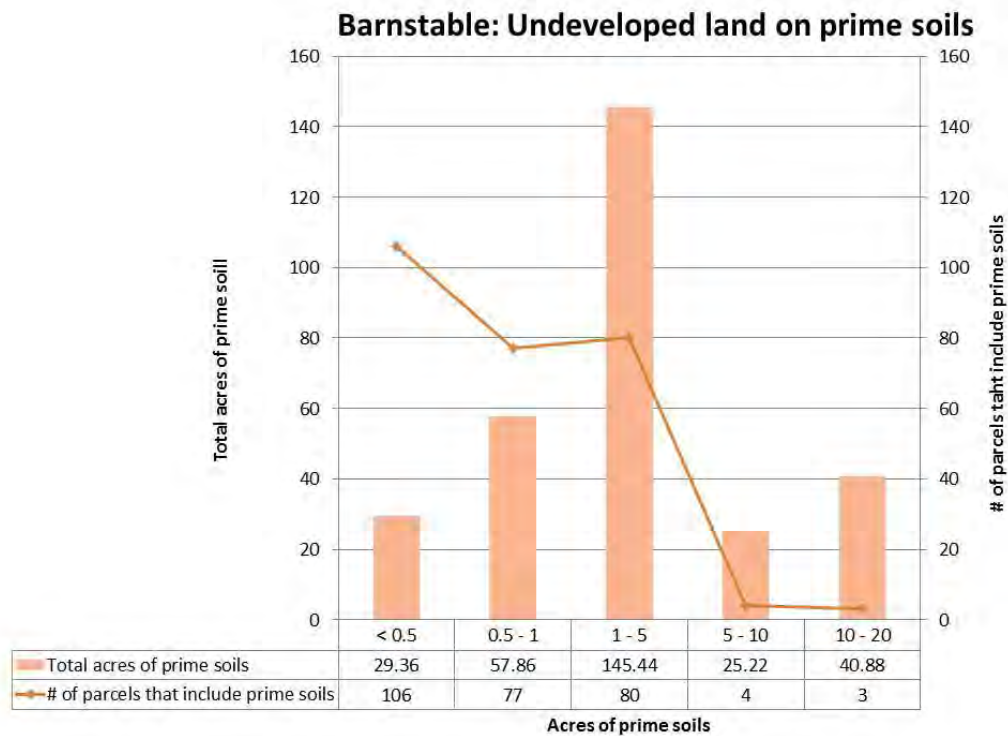


Figure 20. Undeveloped private land and underdeveloped residential land on prime soils in the town of Barnstable.

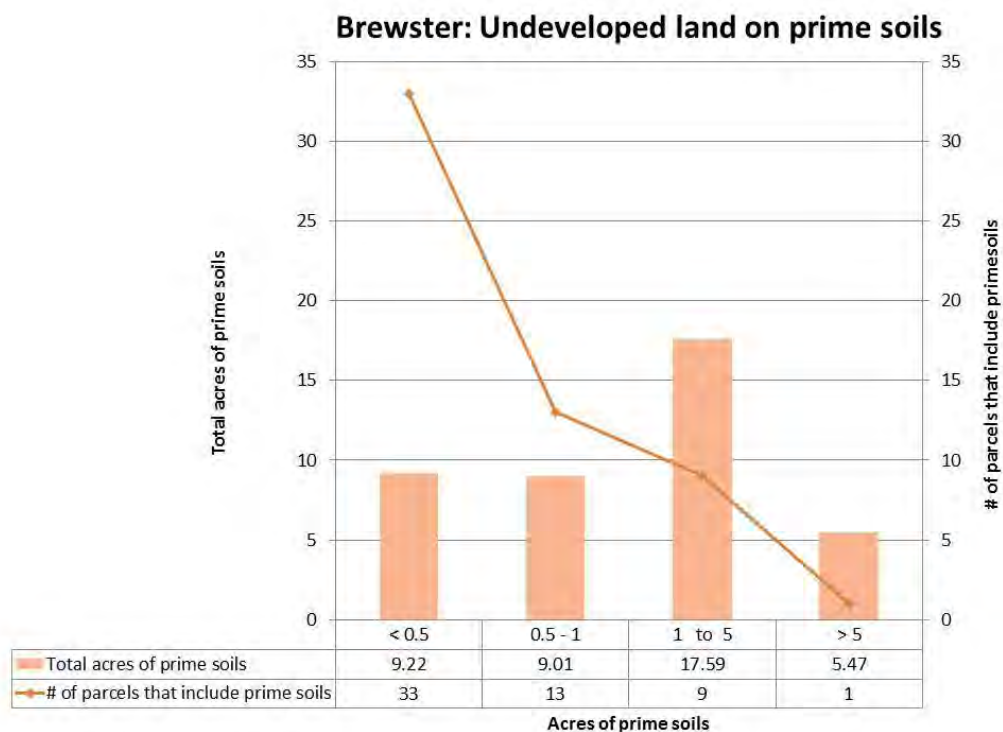


Figure 21. Undeveloped private land and underdeveloped residential land on prime soils in the town of Brewster.

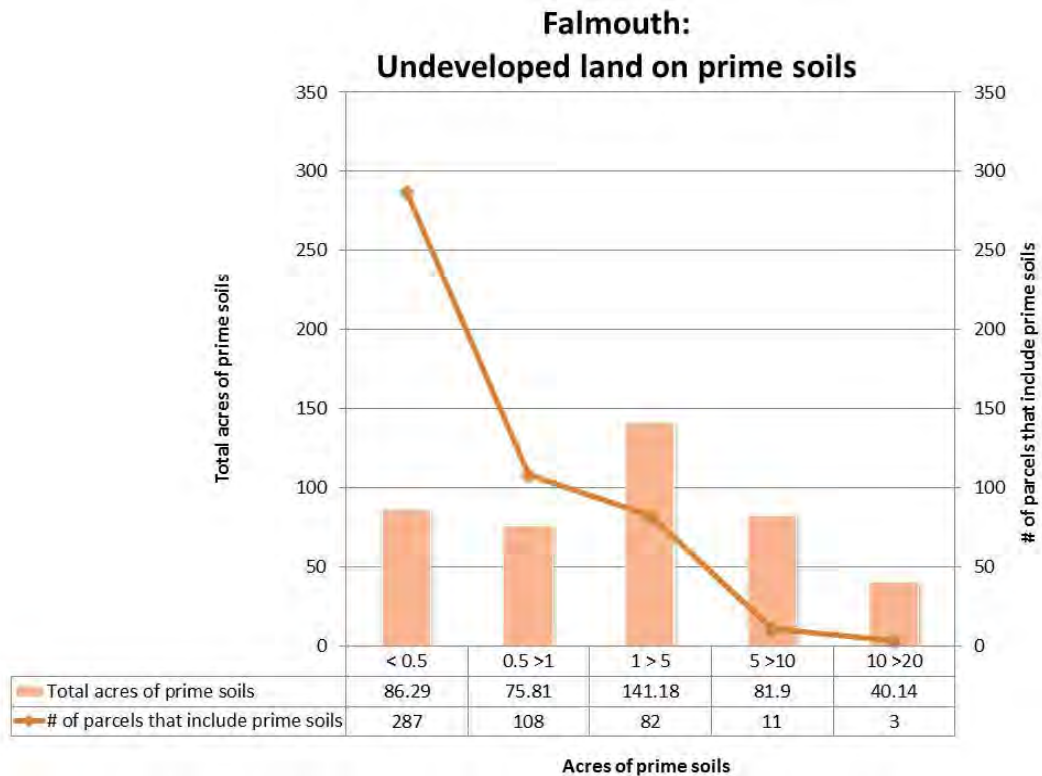


Figure 22. Undeveloped private land and underdeveloped residential land on prime soils in the town of Falmouth.

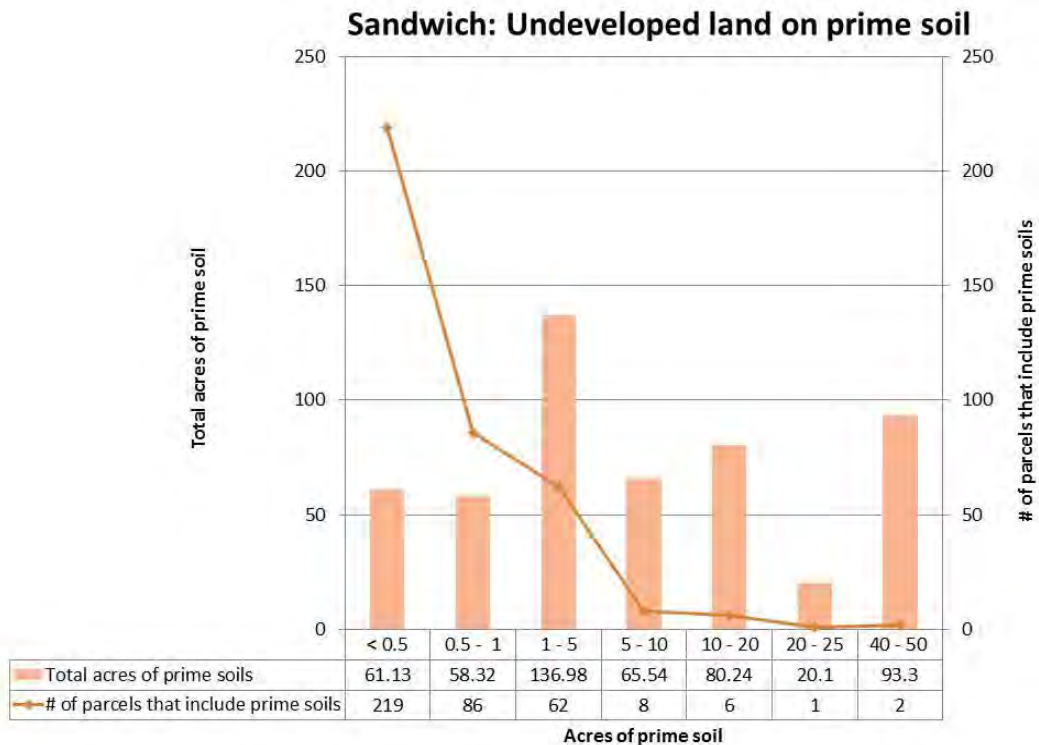


Figure 23. Undeveloped private land and underdeveloped residential land on prime soils in the town of Sandwich.

Figures 24-32 are maps of undeveloped and underdeveloped land on prime soil in the nine towns on Cape Cod that have developable land on prime soils.

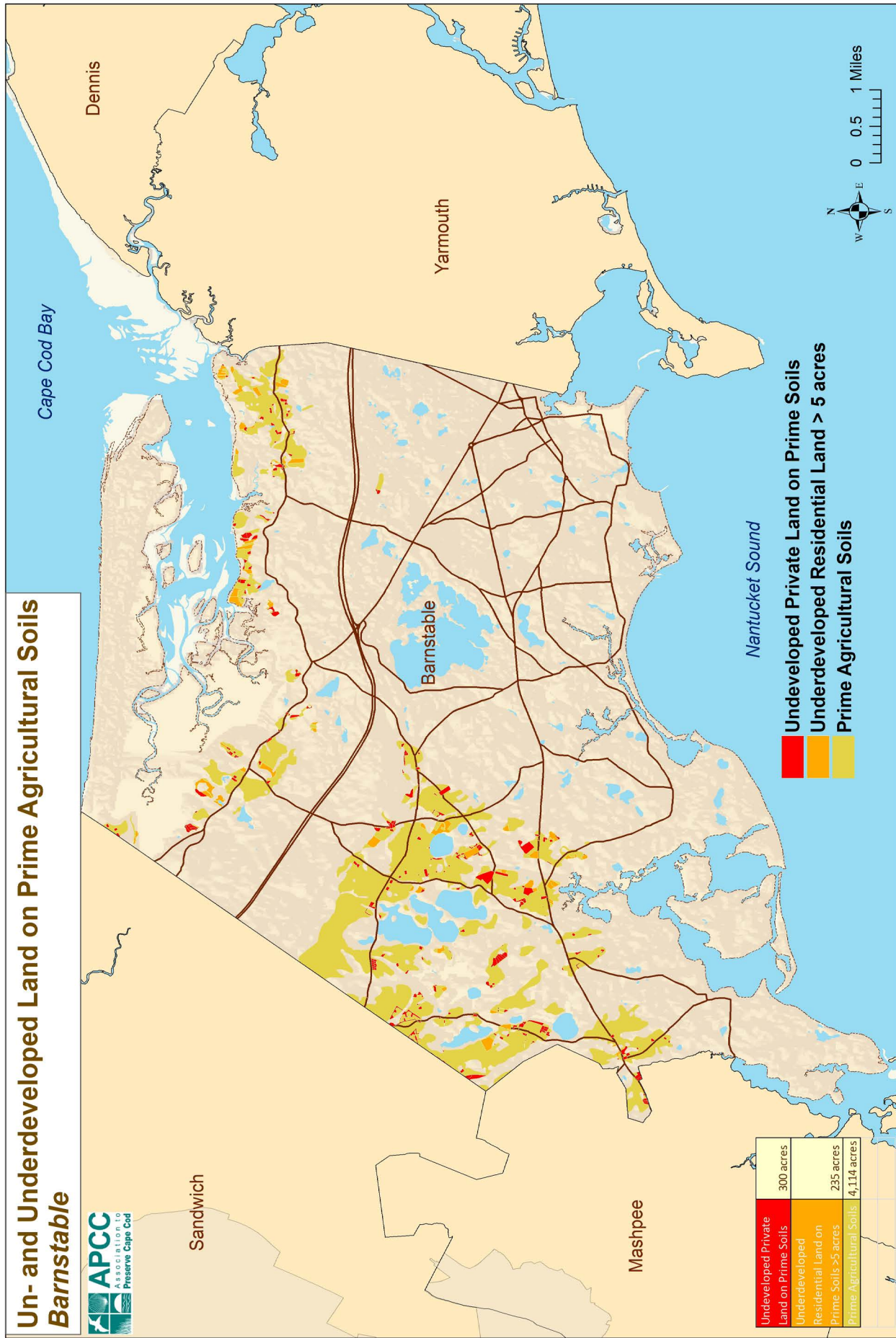


Figure 24. Un- and Underdeveloped land on prime agricultural soils, Barnstable.



Figure 25. Un- and Underdeveloped land on prime agricultural soils, Bourne.



Figure 26. Un- and Underdeveloped land on prime agricultural soils, Brewster.



Figure 27. Un- and Underdeveloped land on prime agricultural soils, Chatham.

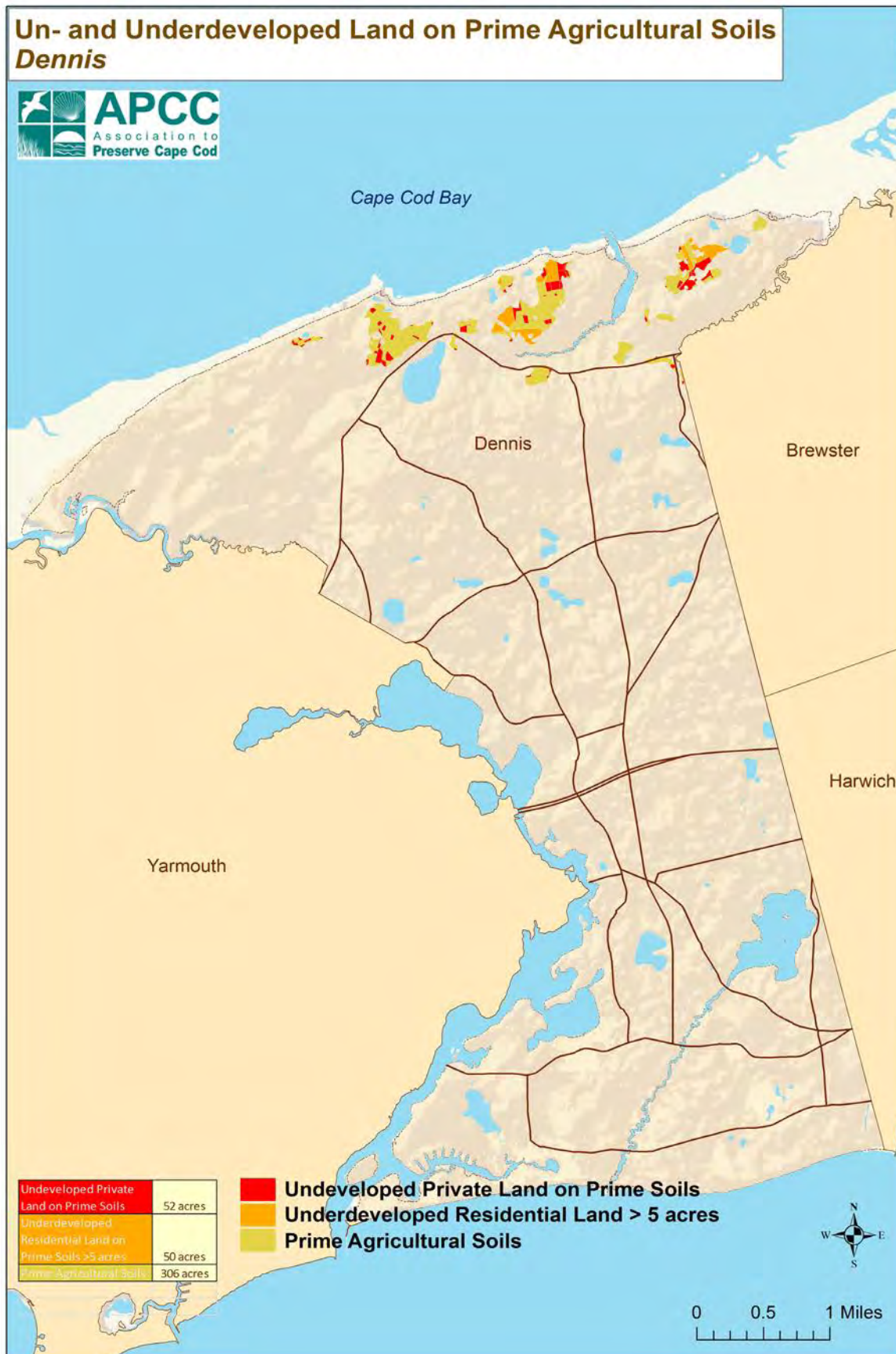


Figure 28. Un- and Underdeveloped land on prime agricultural soils, Dennis.

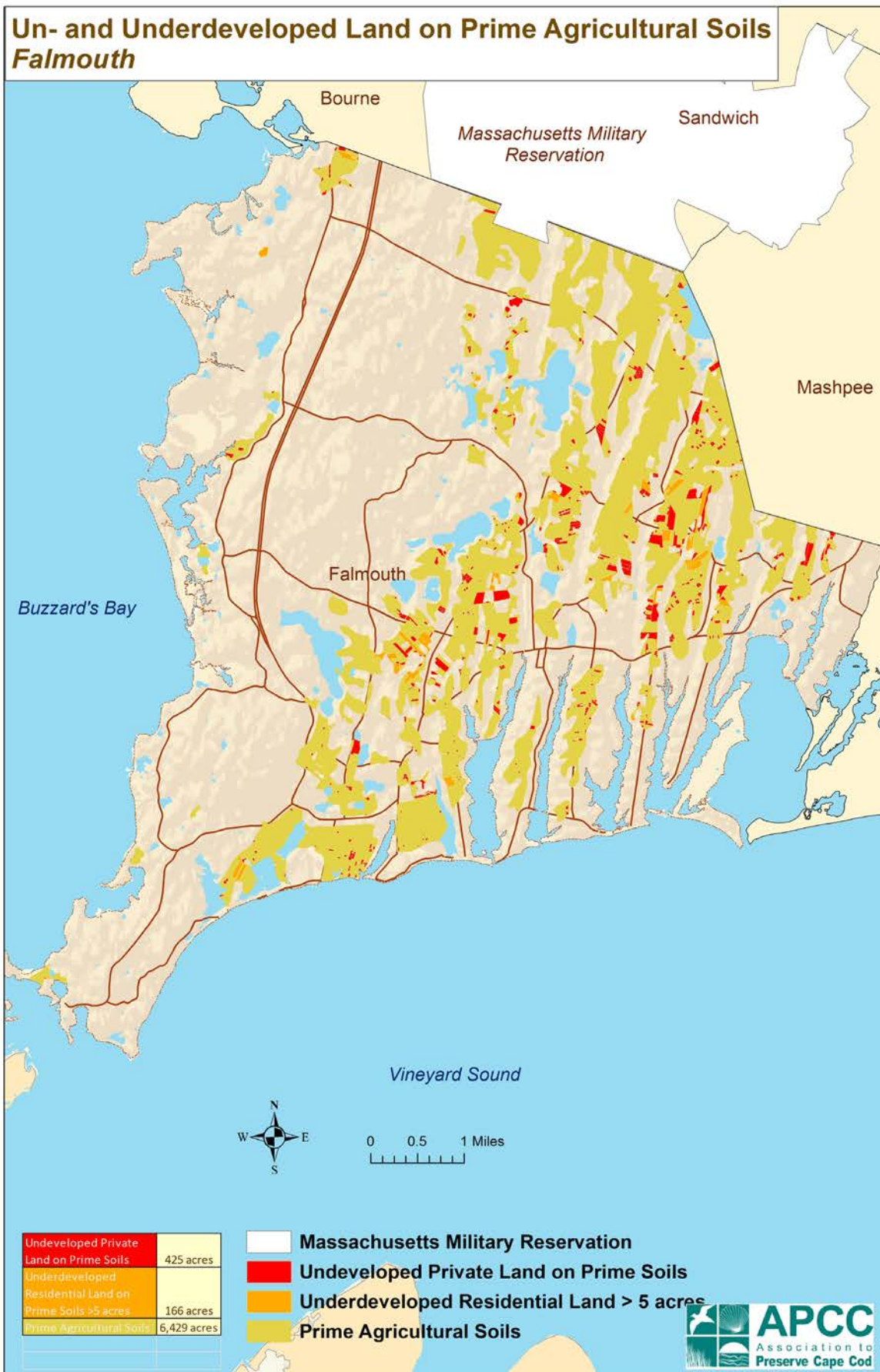


Figure 29. Un- and Underdeveloped land on prime agricultural soils, Falmouth.

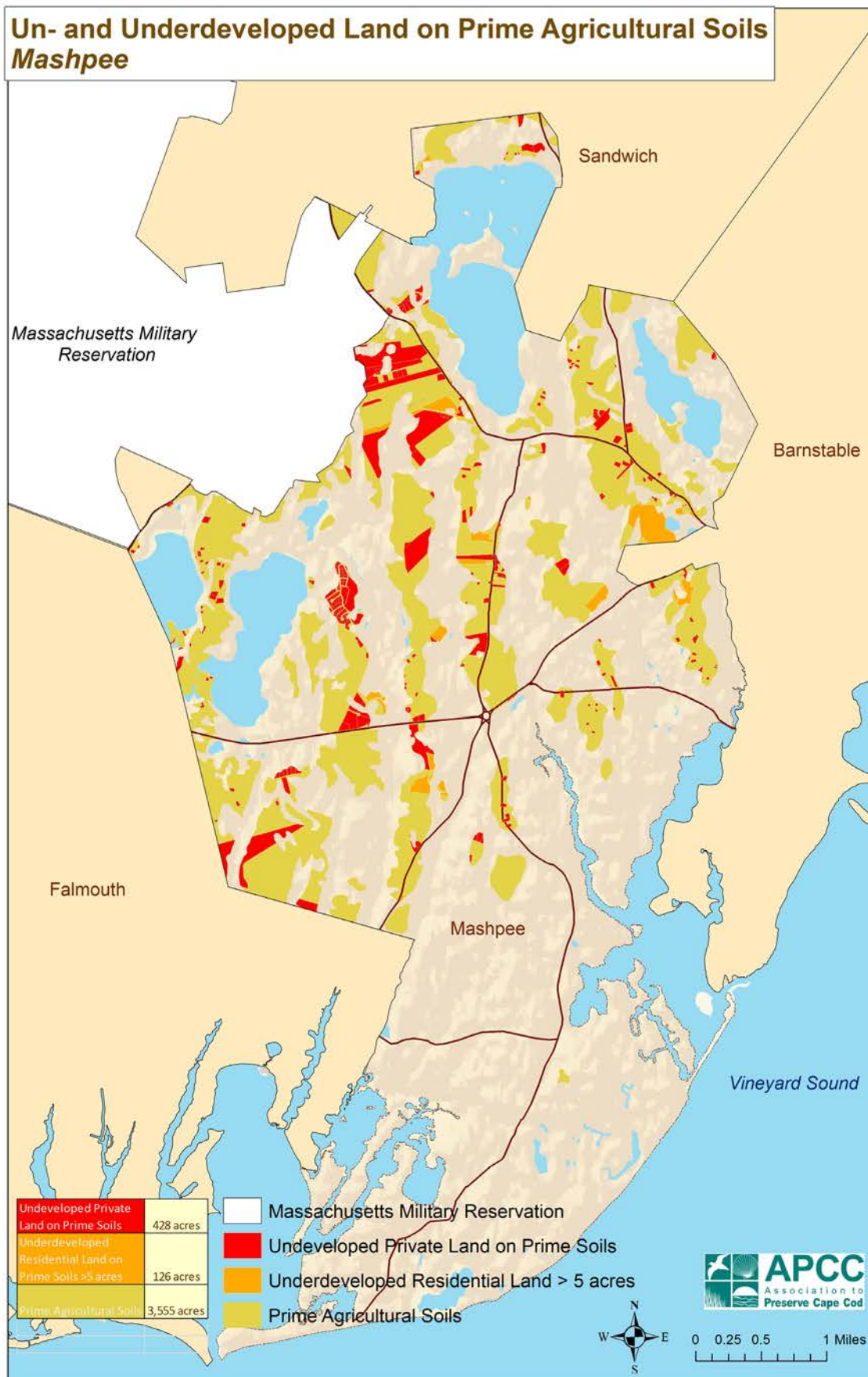


Figure 30. Un- and Underdeveloped land on prime agricultural soils, Mashpee.

Un and Underdeveloped Land on Prime Agricultural Soils Orleans

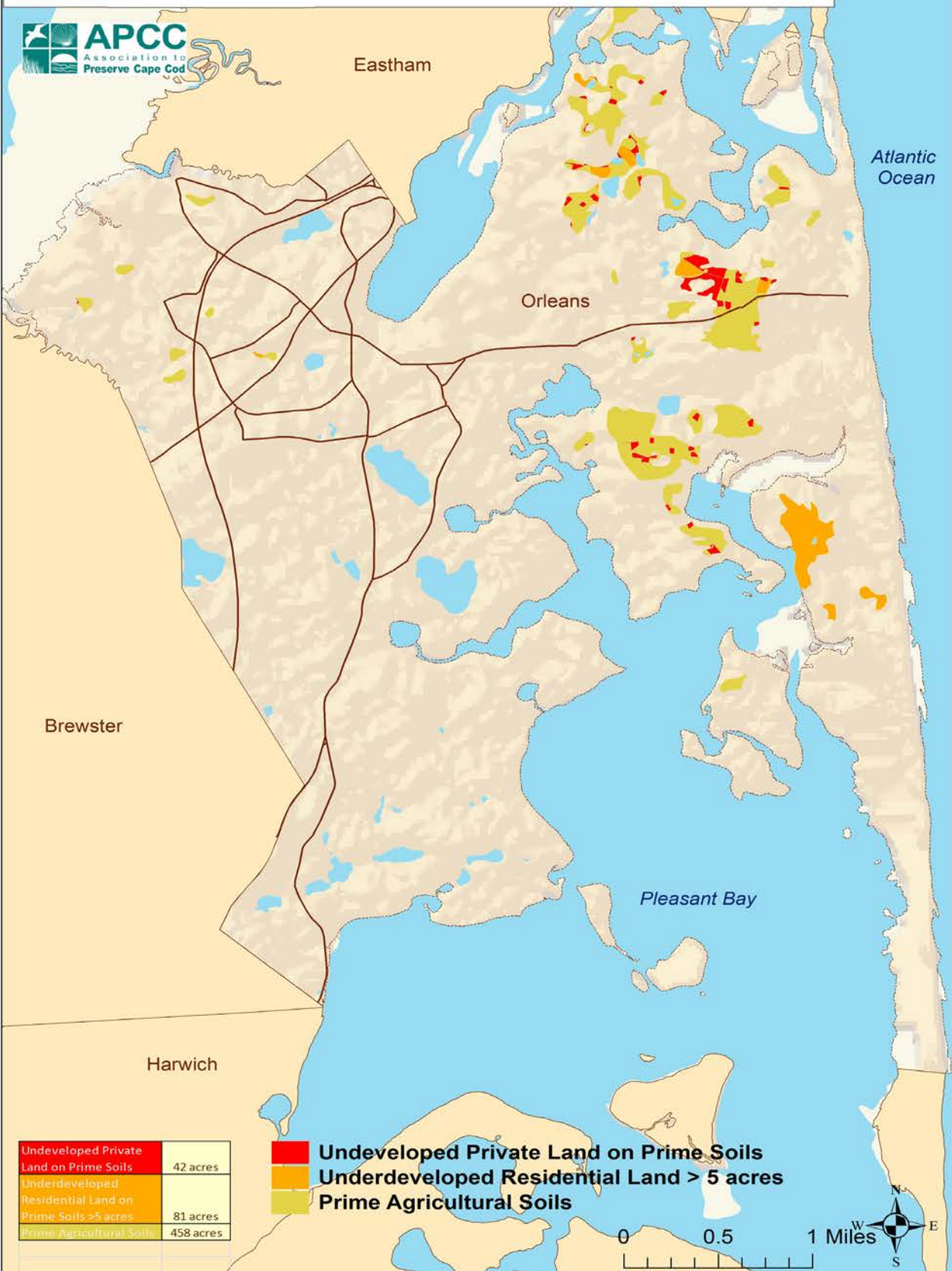


Figure 31. Un- and Underdeveloped land on prime agricultural soils, Orleans.

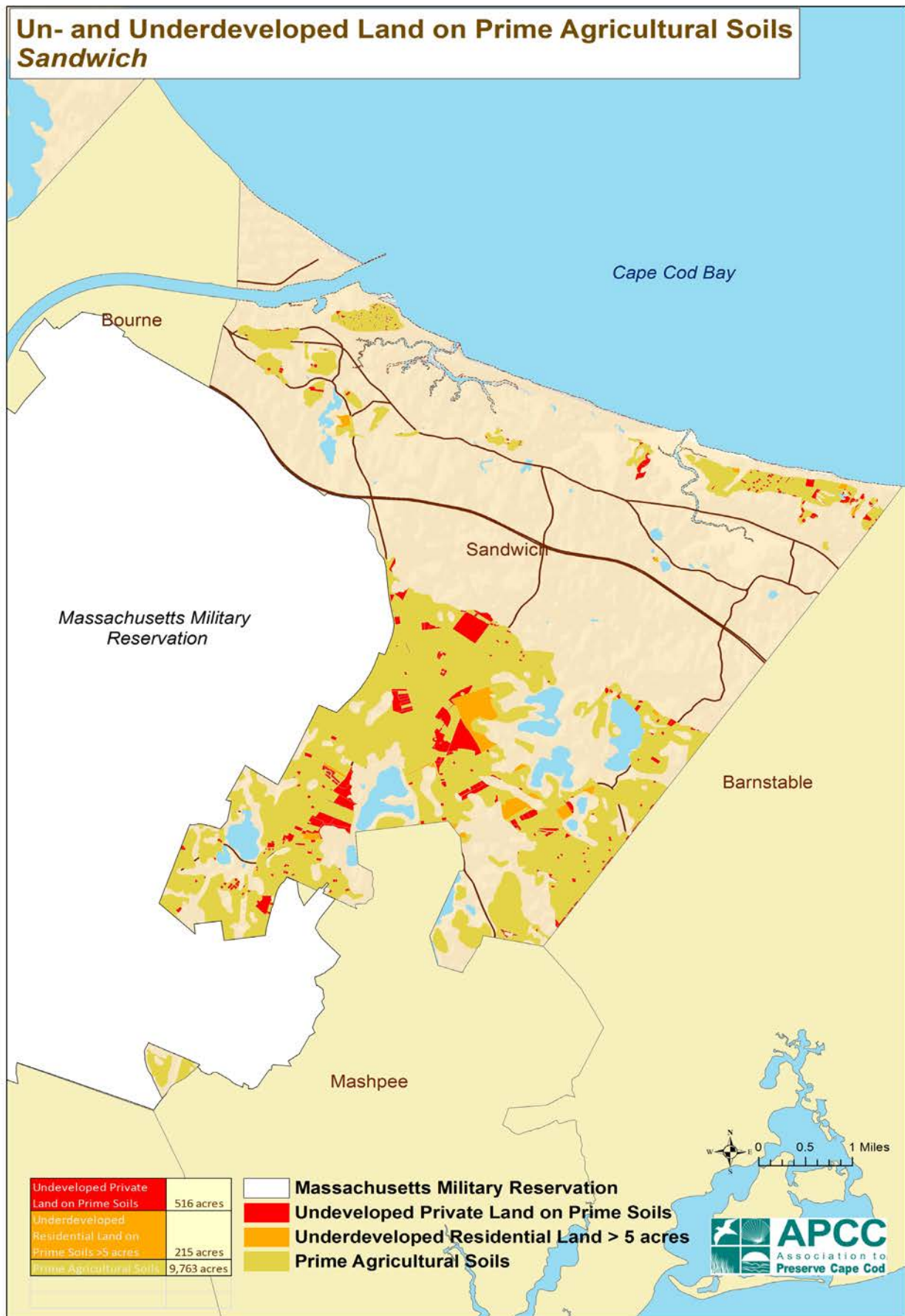


Figure 32. Un- and Underdeveloped land on prime agricultural soils, Sandwich.

E. Economic and Labor Contribution of Barnstable County Agriculture

Sales of Cape Cod Agricultural Products

The United States Department of Agriculture (USDA) includes the dollar value of sales of different kinds of agricultural products (Table 12). Fruits and berries (cranberries) and nursery and greenhouse operations accounted for most sales of products in 2002 and in 2007.

USDA aquaculture data for 2007 were about twice the amount (\$7,349,000) reported by the state of Massachusetts (\$3,485,403) and by far higher than any records in the past decade for Barnstable County. For that reason, this report uses state rather than federal information for sales of aquaculture (Figure 33).

Table 12. Value of sales of agricultural products in 2002 and 2007. Data from the USDA census, except for aquaculture data, which are from the Massachusetts Department of Marine Fisheries. Data are omitted where such information would lead to the identification of a particular farm.

Crops/ Livestock	2002	2007
Vegetables, Melons, Potatoes, and Sweet Potatoes	\$539,000	\$830,000
Fruits and Berries	\$3,340,000	\$5,458,000
Nursery, Greenhouse, Floriculture, and Sod	\$4,695,000	\$3,827,000
Christmas Trees and Woody Shrubs	\$19,000	\$15,000
Other Crops (Hay)	\$14,000	\$13,000
Poultry and Eggs	\$9,000	\$32,000
Cattle and Calves	\$12,000	-
Hogs and Pigs	\$4,000	-
Sheep and Goats	\$9,000	\$25,000
Horses	\$313,000	-
Other Animal Products	\$19,000	\$29,000
Subtotal	\$8,973,000	\$10,229,000
Aquaculture	\$2,754,471	\$3,485,403
Total Agriculture	\$11,727,471	\$13,714,403

Annual sales of aquaculture in Barnstable County 2000 - 2008

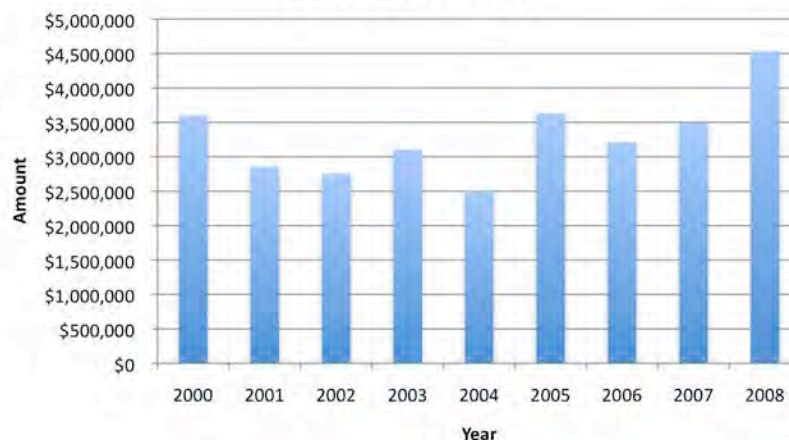


Figure 33: Sales of aquaculture products in Barnstable County from 2000 through 2008. Data from the Massachusetts Department of Marine Fisheries.

A number of different kinds of shellfish are grown commercially in Barnstable County. Table 13 provides a breakdown of 2008 data by town of the kind, amount and value of shellfish grown in Cape Cod waters.

Table 13. Aquaculture in 11 Cape Cod Towns in 2008. (Data courtesy of Massachusetts Department of Marine Fisheries.

Town	Species	Bushel	Value/bushel	2008 Dollar Value
Barnstable	Quahogs (neck)	1749	\$60	\$104,940
	cherry	286	\$28	\$8,008
	chowder	17	\$15	\$255
	Am. Oyster	15196	\$110	\$1,671,560
	Soft Shelled Clam	1669	\$75	\$125,175
	Total	18917		\$1,909,938
Brewster	Quahogs (neck)		\$60	\$0
	cherry		\$28	\$0
	chowder		\$15	\$0
	Am. Oyster	227	\$110	\$24,970
	Soft Shelled Clam		\$75	\$0
	Total	227		\$24,970
Chatham	Quahogs (neck)	20	\$60	\$1,200
	cherry	25	\$28	\$700
	chowder	17	\$15	\$255
	Am. Oyster	1474	\$110	\$162,140
	Soft Shelled Clam		\$75	\$0
	Total	1536		\$164,295
Dennis	Quahogs (neck)		\$60	\$0
	cherry		\$28	\$0
	chowder		\$15	\$0
	Am. Oyster	1965	\$110	\$216,150
	Soft Shelled Clam		\$75	\$0
	Total	1965		\$216,150
Eastham	Quahogs (neck)	289	\$60	\$17,340
	cherry	41	\$28	\$1,148
	chowder	8	\$15	\$120
	Am. Oyster	474	\$110	\$52,140
	Soft Shelled Clam	24	\$75	\$1,800
	Total	836		\$72,548
Falmouth	Quahogs (neck)		\$60	\$0
	cherry		\$28	\$0
	chowder		\$15	\$0
	Am. Oyster	30	\$110	\$3,300

Town	Species	Bushel	Value/bushel	2008 Dollar Value
	Soft Shelled Clam		\$75	\$0
	Total	30		\$3,300
Mashpee	Quahogs (neck)	10	\$60	\$600
	cherry	6	\$28	\$168
	chowder		\$15	\$0
	Am. Oyster	0.5	\$110	\$55
	Soft Shelled Clam		\$75	\$0
	Total	16.5		\$823
Orleans	Quahogs (neck)	482	\$60	\$28,920
	cherry	8	\$28	\$224
	chowder	15	\$15	\$225
	Am. Oyster	1446	\$110	\$159,060
	Soft Shelled Clam	15	\$75	\$1,125
	Total	1966		\$189,554
Provincetown	Quahogs (neck)		\$60	\$0
	cherry		\$28	\$0
	chowder	1	\$15	\$15
	Am. Oyster	2	\$110	\$220
	Soft Shelled Clam		\$75	\$0
	Total	3		\$235
Wellfleet	Quahogs (neck)	22915	\$60	\$1,374,900
	cherry	81	\$28	\$2,268
	chowder	86	\$15	\$1,290
	Am. Oyster	4723	\$110	\$519,530
	Soft Shelled Clam	1	\$75	\$75
	Total	27806		\$1,898,063
Yarmouth	Quahogs (neck)	725	\$60	\$43,500
	cherry	18	\$28	\$504
	chowder		\$15	\$0
	Am. Oyster	90	\$110	\$9,900
	Soft Shelled Clam		\$75	\$0
	Total	833		\$53,904
Total				\$4,533,780

Cape Cod Agriculture Labor Force

Cape Cod agriculture contributes a small percentage to the overall job force on Cape Cod. According to Massachusetts Labor and Workforce Development (DETMMA, 2008), there were 8756 establishments employing people in Barnstable County in 2008 (Table 14). Of these, 134 (1.5%) establishments, which employed 324 people in various ways in a given month, fall under the agriculture category. However, this group includes lumberyards and sportsmen stores as well as farms, horse stables, greenhouses, nurseries and aquaculture businesses. The average weekly wage ranged from \$335 per week for a greenhouse worker to \$717 per week for a fruit farmer. A majority of the weekly wages for the agricultural industry falls below the industry average of \$716 per week.

Table 14. Barnstable County agriculture employment and wages statistics.

Industries	Number of Establishments	Average Monthly Employment	Average Weekly Wage
Agriculture, Forestry, Fishing and Hunting	74	144	\$550
Crop Production	17	45	\$464
Fruit and Tree Nut Farming	8	16	\$717
Greenhouse and Nursery Production	7	28	\$335
Animal Production	8	28	\$578
Animal Aquaculture	8	28	\$578
Agriculture & Forestry Support Activity	7	5	\$549
Support Activities for Animal Production	5	30	\$563
Total of all Cape Cod Industries (including the above)	8,756	68,374	\$716
Orleans	62.12	26	87.12
Provincetown	3.26	8	11.26
Sandwich	693.33	0	693.33
Truro	85.29	0	85.29
Wellfleet	2.97	262	235.97
Yarmouth	224.60	27	251.60
Total	4269.27	605	4874.27