



Department of Agriculture

Bryan P. Hurlburt, *Commissioner*

Established: 1925

Statutory Authority: CGS. Sec. 22.1

Central Office: 450 Columbus Boulevard, Hartford, CT 06103

Number of Employees: 55

Recurring operating expenses: \$6,308,080

Organizational Structure: Office of the Commissioner, Bureau of Agricultural Development and Resource Conservation, Bureau of Aquaculture, Bureau of Regulatory Services, with Business Office and Human Resource Support from the Department of Administrative Services, and legal services provided by the Office of the Attorney General.

Mission

The mission of the Department of Agriculture is to foster a healthy economic, environmental and social climate for agriculture by developing, promoting and regulating agricultural businesses; protecting agricultural and aquacultural resources; enforcing laws pertaining to public health, animal health and animal care; and promoting an understanding among the state's citizens of the diversity of Connecticut's agriculture, its cultural heritage, and its contribution to the state's economy.

Statutory Authority

Statutory authority for the Department of Agriculture is found in Sections 12, 22, 26 and other sections of the Connecticut General Statutes.

Public Service

The department provides public benefits in many different capacities. Through the agency's Regulatory Services Bureau; inspectors ensure domestic animals' health and wellbeing, produce and dairy products we ingest are safe, and local agricultural businesses are trained properly on food safety requirements. The agency's Agricultural Development and Resource Conservation Bureau provides business development and assistance for agribusinesses, delivers programs like Farmers' Markets Nutrition, Farm to School, and Farm to Chef which have a positive community impact, brings awareness of Connecticut agriculture products to residents, and protects our natural farmlands.

The Connecticut Department of Agriculture continues to inform the public; media representatives; and local, state, and federal government officials about various aspects of Connecticut agriculture through its Connecticut Weekly Agricultural Report, news releases, social media, small group or one-on-one meetings, and radio and television appearances.

BUREAU OF REGULATORY SERVICES

The Bureau of Regulatory Services is responsible for enforcing state laws and regulations and certain federal laws in fulfilling the Department's mission relative to protecting public health and safety; ensuring the safety of both plant and animal derived food products; ensuring the general health and welfare of all domestic animals including livestock and poultry; and managing emergency preparedness and response activities for animal disease outbreaks and natural disasters.

The Bureau is organized in to five functional units: (1) Food Safety and Agricultural Commodities; (2) Dairy/Milk Safety; (3) Office of the State Veterinarian and Animal Health; (4) State Animal Control; and (5) Licensing and Animal Population Control Program. Although each unit has separate and distinct responsibilities, certain situations and conditions necessitate collaboration and cooperation between staff of the various units. To that end, and in the interest of maximizing available resources, the Bureau continues to expand its efforts in cross training staff to ensure that field staff are qualified to fulfill more than one job discipline.

The Bureau continues to secure non-state funding to enhance and support programmatic activities. The Bureau has multi-year cooperative agreements with the United States Food and Drug Administration (FDA) to implement state programs to enforce (1) the Produce Safety Rule of the Food Safety and Modernization Act (FSMA) and (2) the FDA's American Feed Program Regulatory Standards (AFRPS). The Bureau continued its yearly cooperative agreements with the USDA's Animal Plant and Health Inspection Service, Veterinary Services (APHIS, VS) fund activities (1) relative to reportable poultry and livestock disease surveillance and (2) animal disease traceability.

The Bureau administers the Department's Dairy Sustainability Grants program pursuant to the provisions of Public Act No. 09-229. Dairy Sustainability Grants totaling \$7,977,348.16 were issued to 84 eligible dairy farms. Of the \$7,977,348.16, \$5,477,348.16 was generated by fees collected pursuant to Public Act No. 09-229 and \$2,500,000 was from special appropriations made to offset the historically low milk prices received by Connecticut milk producers.

It should be noted that for FY 2020 all department programs were and continue to be challenged with the Covid-19 Pandemic. Many of the Department's staff, as is the case with other state agencies, continue to work remotely from their homes. The department made the decision to suspend most on-site inspection activity except for inspections and investigations into situations where there was cause to believe that these situations may pose a threat to public health and safety and or animal health and welfare. The suspension of routine inspection activity extended from April 2020 through the end of June 2020.

Connecticut Hemp Research Pilot Program

Since the enactment on May 19th, 2019 of Public Act No. 19-3, An Act Concerning A Pilot

Program for Hemp Production, the Department has experienced a constant expansion in the number of producers interested in growing hemp and applying to participate in the Department's pilot program. At the end of 2019, there were 109 licensed growers and currently there are 139. In its administration of the Hemp Pilot Program, the Bureau conducts a thorough review of each producer license application for compliance with requirements prior to the issuance of a license; on-site inspections are conducted; samples are collected for submission for laboratory analysis; and laboratory test results are reviewed for to ensure that THC levels are within allowable limits.

Current Status (August 31, 2019)

- 139 active hemp growers
- 501 acres registered to grow hemp
- 13 active hemp processors

Dairy Unit

- Collected and analyzed 1050 samples of processed/manufactured milk, milk products and cheese, 165 samples of raw milk for pasteurization and 140 samples of retail raw milk for compliance with milk safety regulations and the presence of animal drug residues. The retail raw milk samples are also tested for the presence of human pathogens. Staff collected 140 water samples for testing from dairy production and processing facilities and 35 milk samples for vitamin analysis.
- Conducted 165 routine Grade A Dairy Farm inspections, 40 Retail Raw Milk Farm inspections, 80 routine Milk/ Cheese Plant inspections, 36 Pasteurizer Equipment tests, 40 Bulk Milk Tanker inspections, evaluated 20 milk plant samplers, evaluated 25 milk hauler samplers, conducted 145 Special inspections of dairy producers and manufacturers, 6 Milk Plant listing audits, 5 Farm bulk tank unit (BTU) audits and 2 Single Service manufacturer audits.
- Orders/Warnings issued: 1 stop sale orders to milk processors for product quality violations; 5 stop sale orders for retail raw milk producers for product quality violations; 2 stop sale violations to producers of milk for pasteurization due to product quality violations; 3 stop sale violations to producer of milk for pasteurization due to presents of antibiotics violation. Eight (8) warning letters were issued for violations of milk quality standards.
- Dairy staff attended 3 training courses required to maintain their FDA Rating Officer status and one staff member attended the Dairy Practice Council Annual Meeting.
- The Department hosted the annual meeting of the National Dairy Regulatory Officials in July 2019. Members and industry representatives from all over the country attended this 4-day meeting to discuss dairy related issues.

Office of the State Veterinarian and Animal Health Unit

With USDA cooperative agreement funding support, the Bureau continued animal disease surveillance and outreach activities for Avian Influenza, Scrapie and other reportable animal diseases; continued implementation of the National Animal Disease Traceability Program; and partially funded two positions associated with the cooperative agreement programs. The Bureau provided funding to the Connecticut Veterinary Medical Diagnostic Laboratory (CVMDL) at the University of Connecticut to conduct essential diagnostic services; to meet animal disease program surveillance goals; to assist in animal disease investigations; and to provide test data to support disease-free status certifications such as the National Poultry Improvement Plan (NPIP). State animal health surveillance information is coordinated by the State Veterinarian and shared with USDA, APHIS, Veterinary Services through quarterly accomplishment reports and participation in the National Animal Health Reporting System (NAHRS) and the National Animal Health Laboratory Network (NAHLN).

Also, with USDA Veterinary Services cooperative agreement funding support, the Bureau continued its activities with Animal Disease Traceability, Official Animal Identification requirements and monitoring and enforcing compliance with state and federal laws relative to livestock and poultry interstate movement:

- Companion and Small Animal Interstate Movement – processed 6,911 Interstate Certificates of Veterinary Inspection.
- Livestock and Equine Interstate Movement- processed 1,997 Interstate Certificates of Veterinary Inspection for livestock and equine animals moving into and out of this state representing a total of 9,777 total animals.
- Issued 241 livestock import permits representing 2,959 animals imported into Connecticut.
- Issued 79 livestock exhibition permits representing 663 animals.
- Issued 2,344 poultry import permits representing 2,443,508 domestic poultry, upland gamebirds and pet birds imported into this state.
- Official Animal Identification devices issued (pursuant to USDA Animal Disease Traceability Rule): 2144 RFID (radio frequency identification devices), 2000 NUES (metal) ear tags issued directly to CT licensed livestock producers and licensed, accredited, category II veterinarians; and 16,000 back tags issued to CT licensed livestock dealers.
- Issued 8,602 Scrapie program ear tags to goat and sheep producers (pursuant to RCSA §§22-278-A1 through 22-278-A14 and the USDA Scrapie Eradication Rule).
- Received 321 Brucellosis tests performed on cattle, goats and swine, 200 Brucellosis vaccination certificates for cattle, 246 Tuberculosis Tests of cattle and goats, and 20 Porcine Pseudorabies Test charts.
- Equine Infectious Anemia (EIA) Tests- processed 1,883

- 75 flocks and 1,551 birds tested under Avian Influenza surveillance program

Testing for the Presence of Drugs Draft Pulling Contests at Fairs

The Bureau of Regulatory Services, pursuant to the provisions C.G.S. §22-126a, conducted random tests for the presence of performance enhancing drugs on animals entered in drawing (pulling) contests at Connecticut fairs. Staff from the Bureau obtained samples from 7 animals entered in pulling contests for submission to the University of Florida Racing Laboratory for testing. The test results for all samples were negative for the presence of drugs.

Food Safety & Agricultural Commodities Unit

Produce Safety Rule of the Food Safety Modernization Act (FSMA)

The Produce Safety team completed year four of the cooperative agreement with the U.S. Food and Drug Administration (FDA). Year four activities included the first ever inspections of fruit and vegetable growers in Connecticut under the federal produce safety rule which reviews the growing, harvesting, packing and holding of fruits and vegetables. No egregious conditions were observed during inspections. In addition to inspections, DoAg provides funding to the University of Connecticut through a Memorandum of Understanding to promote the nationwide model of educating both before and while regulating fruit and vegetable growers. The MOU with UConn allows for DoAg in cooperation with UConn to provide the nationally accredited, Cornell University developed Produce Safety Alliance Grower Training Course. This course teaches the standards for compliance with the federal rule. Last year 40 industry stakeholders took part in this course.

Animal Feed Regulatory Program Standards (AFRPS)

The Agricultural Commodities team continues to make progress towards full implementation of the 11 Animal Feed Regulatory Program Standards (AFRPS), and will achieve full implementation once the final FDA 60-month audit is passed. Due to COVID-19 outbreak, the 60 month audit was rescheduled from 2020 to a date yet to be determined by FDA.

The AFRPS focus is on a regulatory foundation that includes: standardized training, standardized inspection program, auditing, animal feed related illnesses or death and emergency response, enforcement program, outreach activities, planning and resources, assessment and improvement, laboratory services and a product/ingredient sampling program.

Sample collection for analysis by the Connecticut Agricultural Experiment Station

- 321 - seed samples
- 30 - animal feed samples

- 36 fertilizer samples

Products Registered

- 15,211 Commercial animal feeds, including pet foods
- 4,944 Fertilizers
- 886 Soil Amendments
- 113 Agricultural Liming Materials

Shell Egg Inspection Program (table egg producers with less than 3000 birds)

- 2 Registered producers
- 12 Inspections

Poultry (slaughter) Processor Inspection Program (producers with less than 3000 birds)

- 2 Registered producers
- 3 Inspections

Controlled Atmosphere Facility Storage (apples)

- 3 registered facilities
- 155 inspections
- 4 certifications

FDA Contract Inspections

- 14- BSE Inspections (for materials at risk of transmitting Bovine Spongiform Encephalopathy)
- 4 Veterinary Feed Directive Inspections (Medicated Feed)

Animal Feed Good Manufacturing Practice (cGMP) Inspections

- 2 inspections

Produce Safety Part 117 inspections

- 28 registered fruit and vegetable growers
- 25 inspections

State Animal Control Unit

During the Fiscal Year 7/1/19 through 6/30/20, the State Animal Control Unit experienced a number of changes in staff personnel. One senior State Animal Control Officer (SACO) retired. (This closely followed the retirement in March of 2019 of another senior SACO). Three new SACO's and a new State Animal Control Supervisor were hired and added to the staff during this time frame. There is now a total of 8 sworn State Animal Control Officers (1 supervisor and 7 SACO's). During this period the unit has conducted 292 formal investigations, which are defined as incidents that require being documented on a formal report form in the e-License investigative report module. The unit handled 969 miscellaneous complaints, 1 livestock damage claim, issued 54 written warnings, 9 infractions, 1 misdemeanor summons, and had 3 arrests. There were 14 reports received

from DCF reporting to the Department of Agriculture, reporting the Suspected Animal Harm, Neglect or Cruel Treatment. There were also 58 suspected animal abuse reports received from various ACO's from all over Connecticut that were forwarded by DoAG to DCF under the current cross reporting statutes.

The unit conducted inspections of municipal dog pounds (49 inspections), pet shops (70), pet grooming facilities (298), commercial kennels (151), dog training facilities (78), and processed 59 rabies cases where humans or domestic animals were exposed to a rabid animal. From early in April through late June, officers did not perform any routine facility inspections due to the COVID-19 pandemic.

The Bureau continues to conduct an annual 96-hour instructional training program, for animal control officers (ACO Academy). Newly appointed municipal animal control officers must complete a minimum of 80 hours of instruction following a curriculum standard as mandated by C.G.S. §22-328. Approximately 27 new municipal animal control officers and 1 state animal control officer received certificates of completion this past year. Instructors include Department of Agriculture staff, State's Attorneys, Police Officers, Veterinarians and other subject matter experts all of whom volunteer their time.

Licensing Unit

The Department has transitioned all licensing processes to the enterprise eLicense system. More than half of the agency's licenses and permits can be obtained or renewed online, increasing productivity for office staff and convenience for the general public. Licenses for the recently legalized hemp program are exclusively online, eliminating the use of a large number of printed pages and making the process more convenient. The agency is working towards eliminating paper renewals and certificates for all licenses, saving not only money but also helping the environment and speeding up the process. Total licensing fees collected for fiscal year 2020 was \$2,188,302.54. (61% of the payments were made online)

DoAg Licenses for FY20

Credential Type	Active, and In-Renewal
ANIMAL CONTROL OFFICER	261
ANIMAL IMPORTER	225
ANIMAL SHELTER FACILITY	16
BULK MILK TANKER	57

CERVIDAE HERDS	10
COMMERCIAL ANIMAL FEED MANUFACTURER	47
CHEESE MANUFACTURER	21
COMMERCIAL KENNEL	278
COMMERCIAL FEED	665
COMMERCIAL FERTILIZER	352
COMMISSION SALES STABLE	1
EGG GRADING PLANT	6
EQUINE AUCTION	1
GROOMING FACILITY	460
HEMP GROWER	139
HEMP PROCESSOR	13
LIMING MATERIALS	33
LIVE POULTRY DEALER	105
LIVESTOCK DEALER/BROKER	37
MILK DEALER	131
MILK EXAMINER	178
MILK LABORATORY	10
MILK PRODUCER	97
MILK SUB-DEALER	123
PET SHOP	85
POULTRY MORTALITY DISPOSAL	11
POULTRY SLAUGHTER FACILITY	1
RAW MILK CHEESE MANUFACTURER	4
RETAIL DAIRY STORE	2906
RETAIL RAW MILK PRODUCER	12
SOIL AMENDMENTS	226
SEED LABELER	98
TRAINING FACILITY	155
TOTAL	6764

Animal Population Control Program

The Department's Animal Population Control Program (APCP) continues to increase the level of immunization against infectious animal diseases by providing sterilization and vaccination benefits for dogs and cats to (1) Connecticut residents for dogs and cats

adopted from municipal pounds; (2) to low income residents for dogs and cats that they own; and (3) to non-profit organizations engaged in activities aimed at reducing the population of feral cats.

In Fiscal Year 2020, the APCP provided vouchers for 5,072 animals (1,965 dogs and 3,107 cats) from municipal impound facilities, pets owned by low-income CT residents and feral cats from non-profit organizations. 3,439 of the 5,072 vouchers issued were redeemed for a 68% overall sterilization rate for intact dogs and cats adopted from municipal impound facilities.

BUREAU OF AGRICULTURAL DEVELOPMENT AND RESOURCE CONSERVATION

The Bureau of Agricultural Development and Resource Conservation is comprised of two units; the Agricultural Development Unit and the Resource Conservation Unit. The bureau offers programs and services that assist farms with entering, diversifying and expanding their agricultural businesses and administers the Farmland Preservation Program, among many others.

AGRICULTURAL DEVELOPMENT UNIT

In addition to many other functions, the Agricultural Development Unit conducts marketing and outreach to both farmers and public for the agency as a whole. It provides business development services in cooperation with state, federal, and private partners for both direct-to-consumer and wholesale market opportunities through a diverse portfolio of 25 different programs and services.

State & Federal Grant Opportunities

- Assisted coordination and promotion of 149 independently operated certified Connecticut Grown farmers' markets, farm stands and mobile markets featuring 308 certified farmers.
- Administered Connecticut's Farmers' Market Nutrition Programs (FMNPs) to provide \$1,046,753 in checks for the purchase of Connecticut Grown fruits and vegetables at authorized farmers' markets to 41,917 nutritionally at-risk women, infants, and children and 22,410 low-income seniors.
- Successfully applied for and received \$424,082.57 from the United States Department of Agriculture's Specialty Crop Block Grant program to fund five (5) projects to enhance the competitiveness of Connecticut specialty crops.
- Provided \$49,768 in federal funds to 87 certified organic producer and processors to reimburse up to 75%, not exceeding \$750, of their annual USDA organic certification.
- Funded \$554,285 in matching Farm Transition Grants to sixteen (16) Connecticut farms for projects with a cost of \$770,995 using Community Investment Account funds. Funding priorities for this program include, but are not limited to:
 - Diversification of existing farm operations into new and emerging crops and/or product lines.
 - Strengthening infrastructure to meet changing climate conditions.

- On-farm improvements to comply with the Produce Safety Rule of the Food Safety Modernization Act
- Meeting food safety requirements for advanced positioning in the marketplace.
- Improving food security and food systems in urban areas to increase access to Connecticut Grown products
- Increasing year-round availability of Connecticut Grown products while enhancing farm viability.
- Funded \$469,318 in matching Farm Viability Grants to three (3) municipalities and seventeen (17) non-profits for projects with a total cost of \$829,570 using Community Investment Funding priorities for this program include, but are not limited to:
 - Enhancing consumer awareness of CT Grown
 - Increasing access to farmland and farmland preservation
 - CT Grown value-added processing for expanded availability of CT Grown foods year-round
 - Improving food security in urban and rural areas
 - Enhancing agricultural education and industry outreach at agricultural fairs and expositions
 - Assisting farmers with meeting existing and emerging food safety requirements

Export Assistance & Wholesale Collaboration

- Partnered with Food Export Northeast to increase Connecticut value added food and agricultural exports to domestic and international markets.
- Provided 250 certificates of free sale to eligible Connecticut food companies which needed this necessary documentation to export their products.
- Training for producers and wholesale buyers within the domestic and international food industry as well as buyer/grower networking events facilitating one-on-one meetings between producers and buyers. Individual meetings and conversations with DoAg staff and buyers and users of Connecticut Grown have allowed the agency to develop our efforts for increased sales and use of Connecticut farm products.
- Sales opportunities and export education through our partnership with Food Export Northeast. Specifically, a library of webinars on export education and coordination of one-on-one meetings with buyers, wholesale distributors, and brokers at SIAL Canada and The Summer Fancy Foods Show- NYC to promote Connecticut farm and food products.

“Farm-to-“ Programs

- Rejuvenated the state’s Farm-to-Chef program to connect Connecticut farms with foodservice professionals and markets. Through monthly newsletters, email blasts, and Facebook interaction, the Farm-to-Chef program has reinvigorated connections between producers and culinary professionals.
- Organized and coordinated 2020 Farm-to-Chef Week, featuring dining venues offering menus made with Connecticut Grown ingredients.
- Continued to strengthen the Department of Agriculture’s collaboration with the state Department of Education and its involvement in Connecticut’s Farm-to-School program. The agency participated in the Farm-to-School strategic planning sessions with the Connecticut Farm-to-School Collaborative and UCONN’s Put Local on Your

Tray Program, including, the Farm-to-School Summit with producers, school food service professionals, distributors, and other Farm-to-School stakeholders to develop an action plan for Farm-to-School moving forward.

- Meetings with the CT Farm-to-School Collaborative open discussions between the Department of Agriculture the Connecticut State Department of Education, School Nutrition Association of Connecticut, and UCONN Extension to better inform our decisions regarding farm to school objectives and plans of action.
- Independent discussions with State Department of Education representatives and DoAg staff with regard to events such as CT Grown for CT Kids Week in October, the Department of Defense Fresh program, and the Fresh Fruit and Vegetable Programs here in Connecticut have allowed for discussions regarding advancement of efforts between agencies.

Agency Marketing & Outreach

- *Industry Outreach Events* The Unit frequently engages in a number of industry related events to engage with the industry and make them aware of the programs and services provided through the Ag Development Unit and agency as a whole. These event in FY2020 included:
 - Farm Viability Grant Writing Workshop (October 2019)
 - New England Dairy Annual Meeting (October 2019)
 - CT Maple Syrup Productions Quarterly Meeting (November 2019)
 - Connecticut Farm Bureau Annual Meeting (November 2019)
 - Agri-Mark Regional Dairy Meeting (December 2019)
 - Farm Stress Management Meeting (December 2019)
 - New England Fruit and Vegetable Conference and Trade Show (December 2019)
 - Connecticut Pomological Society Annual Meeting (January 2020)
 - CT Fruit and Vegetable Grower Meeting (January 2020)
 - Connecticut Greenhouse Growers Association Meeting (January 2020)
 - Farm Transition Grant Writing Workshop (January 2020)
 - Enfield Ag Summit (February 2020)
- *Agency Website:* The importance of an updated, relevant website as the agency's information source to the industry and consumers is critical. In FY2020 the following occurred to ensure this effort was adequately maintained:
 - Expanded the number of content and system administrators to improve website maintenance and relevancy.
 - Continued to utilize the website to improve customer service; develop and expand agricultural markets; preserve Connecticut farmland, and expand the use of working lands; protect populations from getting or spreading agricultural diseases; and protect and inspect animal health and well-being.
- *Other Agency Supported Websites:* To support Connecticut agriculture and make the availability of Connecticut Grown farm products known, the agency also:
 - Renewed the user-friendly website redirect of www.CTGrown.gov
 - Maintained additional consumer-friendly website alias including: www.PassporttoCTFarmWine.com; www.GrowCTFarms.com;
 - Maintained stand alone websites including: CTDairy.org; ConnecticutGrownStore.com; CTApples.org

- ConnecticutGrownStore.com: Operated an online marketplace for Connecticut Grown merchandise and apparel, selling \$5,679.32 in merchandise, helping to strengthen the Connecticut Grown brand.
- *Boards Councils and Commissions:* The Unit works with four statutorily authorized boards and councils to have industry representations to the agency and to advance the industries of focus. These include:
 - Farm Wine Development Council: Provided staffing/administrative support to the Connecticut Farm Wine Development Council to deliver \$47,500 in programming for industry members and consumers, including one educational event, one wine passport contest, wine tasting and sales by glass and bottle in the Connecticut Building at the Big E, and development of an electronic application of the wine passport.
 - Connecticut Milk Promotion Board: Provided staffing/administrative support to the Connecticut Milk Promotion Board to deliver more than \$350,000 in programming, including farm to school grants; Fuel Up to Play 60 grants; consumer outreach in Connecticut Building at Big E and assorted fairs and festivals; and food pantry support during the COVID-19 pandemic.
 - Connecticut Food Policy Council: Brought together food policy stakeholders from a variety of sectors including state agencies, food banks, non-profit organizations, and community members to discuss food policy and practices, available resources, current initiatives, and information sharing. In the course of these meeting information on learning opportunities such as the Hungry for Change Conference, hosted by End Hunger CT!, Connecticut Department of Administrative Procurement trainings, and work being done throughout the state such as the City of Bridgeport Urban Ag Master Plan, among others, has been shared. In 2020, the Council approved \$10,000 in funding to Hartford Food Systems for development of a State Food Action Plan.
 - Connecticut Apple Marketing Board: Promoted Connecticut Apple Producers through numerous marketing efforts. including maintenance of:
 - The CT Apples website at www.CTApples.org with 3,134 users and 7,233 views
 - The CTApples App had 910 users, of which 84 were new this year, with the highest views on the Grower Directory, followed by the social media connect.
 - Printed and distributed 7500 informational brochures including Apple Varieties and Uses, Orchard Locations, and a children's educational brochure which were sent to four Welcome Centers throughout Connecticut and distributed at events.
 - Partnered with the UCONN Put Local on Your Tray Program to promote Connecticut Grown apples to children in grades K-12.
 - The following social media platforms produced the following results:
 - Facebook had 13,645 fans with 15,000- 45,000 reaches per week during apple season.
 - Instagram had 355 followers
 - Pinterest had 197 followers on 23 boards with 1165 "Pins". It had over 3600 active viewers per month between July 1, 2019 and June 30, 2020.
- *Consumer Outreach Events* The Unit frequently engages in consumer facing events to promote the availability and accessibility of CT Grown farms and farm products. Some of these events included:

- Connecticut Building during The Big E: Operated four agriculture booths in the Connecticut Building during the 2019 Big E in September and October in collaboration with the Department of Economic and Community Development featuring 38 different agricultural organizations or businesses.
- Celebrating Agriculture (September 2019)
- Agriculture Day at the Capitol: Due to COVID-19, the 2020 Ag Day at the Capitol was cancelled a week before the event was scheduled to take place. If it had, it would have featured 43 exhibits showcasing Connecticut agriculture and farm products, in collaboration with the Connecticut Agricultural Information Council.
- *Social Media and Consumer-Focused Marketing Efforts:*
 - Strengthened the agency's social media program to expand public awareness of Connecticut Grown products and agriculture through eight Facebook pages with more than 37,723 fans combined, and three Pinterest pages with 36 boards, 1,457 pins, 811 followers, and 954 monthly views.
 - Developed and implemented the Connecticut Farm-to-Chef Week: \$2,630, on radio advertising with Total Traffic and Weather Network during peak drive times (reaching more than 104,330 listeners on the Total Traffic and Weather Network alone). Supplemented with organic social media campaign reaching more than 6,700 unique users.
 - Facebook Reach, FY 19-20:

Passport to Connecticut Farm Wineries



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Connecticut Farm-to-Chef



Connecticut Department of Agriculture



Connecticut Grown Store



Connecticut Farmland Preservation



Connecticut Apples



Connecticut Dairy



RESOURCE CONSERVATION UNIT

Agriculture is one of Connecticut's most vital economic sectors, and at its heart is the state's extraordinary prime and important farmland. The Department of Agriculture preserves working farmlands by acquiring development rights to agricultural properties through its Farmland Preservation Program, ensuring that the land remains available only for agricultural use in perpetuity. In addition to the Farmland Preservation Program, the Resource Conservation Unit also provides:

- Farmland Restoration Grant Program
- Community Farms Preservation Program
- Connecticut FarmLink Program

The main objective of the Farmland Preservation Program is to establish a farmland resource base, consisting mainly of prime and important farmland soils that will ensure local availability of fresh farm products and help agriculture remain as an important part of the state's economy.

As of June 30, 2020, the program has preserved 45,670 acres on 379 farms since 1980. The long-term goal is to preserve 130,000 acres, with at least 85,000 of prime, statewide, or locally-important farmland soils.

- Acquired the permanent development rights on 11 farms totaling 1,162 acres at a total cost of \$5,553,000, while leveraging \$2,653,540 in federal USDA Agricultural Land Easement Program (48 % cost share), bringing the Farmland Preservation Program's total to 379 protected farms covering 45,670 acres.
- Managed and made farmland restoration improvements for 10 agricultural use permits which include dairy, hay, diversified vegetables, and small fruit production.
- Entered into 23 new purchase-of-development rights (PDR) offer agreements to preserve approximately 2,000 acres, encumbering \$11,300,000.
- Advanced an additional 35 other PDR projects, totaling approximately 2,670 acres at an estimated \$13,162,000 in preservation costs.
- Successfully secured \$3,000,000 in federal FY 2019 USDA federal obligated funds from an Agricultural Lands Easement (ALE) Cooperative Agreement for up to 14 PDR projects covering 900 acres.
- Submitted applications for the federal FY 2020 USDA ALE program and received pre-approval of \$2,500,000 in new federal funds towards the permanent preservation of another 12 farms covering an additional 1,000 acres.
- Continued advancing partnerships with 12 municipalities, on a total of 22 ongoing joint farmland preservation projects. These partnerships occur in all eight counties, in rural, suburban and urbanized areas, including Easton, Ellington, Granby, Lebanon, Middletown, New Milford, Rocky Hill, Southington, South Windsor, Suffield, Windsor, and Woodstock.
- Also collaborated with multiple land conservation trusts on ongoing farmland preservation project partnerships, including the Bolton Land Trust, Connecticut Farmland Trust, Northwest Connecticut Land Conservancy (formerly Weantinoge Heritage Land Trust), Southbury Land Trust, and Winchester Land Trust.

- Preserved two additional Community Farms Preservation Program farms comprising 113 acres at a total cost of \$802,400, permanently protecting the farmland for food production in partnership with the Town of New Hartford (who contributed \$196,200), and with the Town of Canton (who contributed \$164,860).
- Maintained 32 partnership agreements with municipalities for the permanent preservation of farms within these towns, through the Community Farms Preservation Program.
- Assisted municipalities in applying for and receiving locally important soils designation from the USDA Natural Resources Conservation Service (NRCS), which enables farms in their respective towns become eligible for the Community Farms Preservation Program and for USDA NRCS Agricultural Lands Easement funding. The total number of municipalities with USDA locally-important soils is now up to 91, now representing more than half of the state's 169 towns.
- Provided over \$710,000 in funding through the Farmland Restoration Grant to 49 projects with \$1,583,000 in total project costs, bringing more than 430 acres back into active agricultural production, for a total of more than 292 applications with an estimated 2,620 acres since the program's 2012 inception.
- Continued improving and enhancing the Connecticut Farmlink website, which averages more than 1,900 visits per month and 3,000 page views per month, helping connect new and beginning farmers to owners with available farmland.

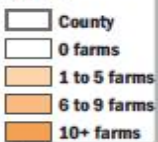
Protected Farms: CT Farmland Preservation Program

379 Protected Farms and 45,700 acres as of Summer 2020

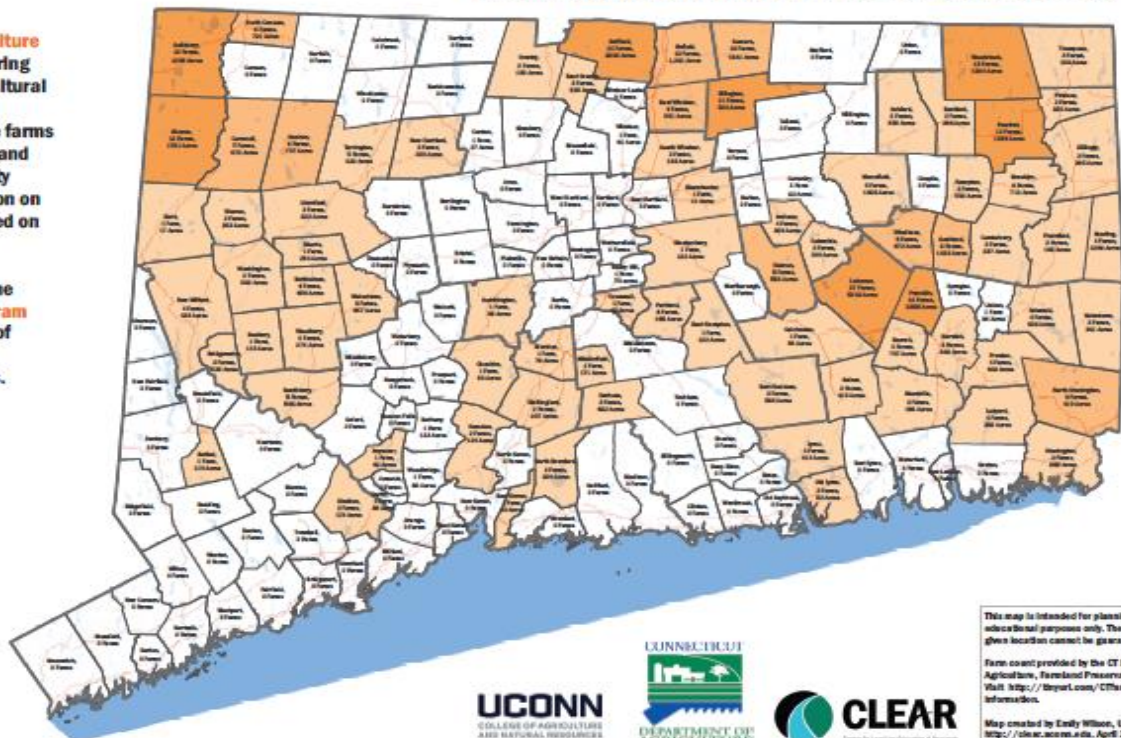
The CT Department of Agriculture preserves farmland by acquiring development rights to agricultural properties in communities throughout Connecticut. The farms remain in private ownership and continue to pay local property taxes. A permanent restriction on nonagricultural uses is placed on these properties.

For more information, visit the [Farmland Preservation Program](http://tinyurl.com/CTfarms) page on the CT Department of Agriculture's website <http://tinyurl.com/CTfarms>.

Legend



Many farms are in more than one town and are counted in each.



UCONN
COLLEGE OF AGRICULTURE
AND NATURAL RESOURCES

CONNECTICUT
DEPARTMENT OF
AGRICULTURE

CLEAR
Center for Land & Water Resources

This map is intended for planning and educational purposes only. The accuracy of any given location cannot be guaranteed.

Farm count provided by the CT Department of Agriculture, Farmland Preservation Program. Visit <http://tinyurl.com/CTfarms> for more information.

Map created by Emily Wilson, UConn CLEAR, <http://clear.uconn.edu>, April 2016.

BUREAU OF AQUACULTURE

The Department's Bureau of Aquaculture (DA/BA) is the designated State Shellfish Authority for the State of Connecticut, which participates in the National Shellfish Sanitation Program (NSSP) as a shellfish producing State. The NSSP is the federal/state cooperative program recognized by the U.S. Food and Drug Administration (FDA) and the Interstate Shellfish Sanitation Conference (ISSC) for the sanitary control of shellfish produced and sold for human consumption. The purpose of the NSSP is to promote and improve the sanitation of shellfish (oysters, clams, mussels and scallops) moving in interstate commerce through federal/state cooperation and uniformity of State shellfish programs. Environmental Analysts working in the Shellfish Program participate in all aspects of the national program, including the Shellfish Growing Area and Shellfish Plant Standardization Programs.

The ISSC was formed in 1982 to foster and promote shellfish sanitation through the cooperation of state and federal control agencies, the shellfish industry, and the academic community. The ISSC adopts uniform procedures that are incorporated into an Interstate Shellfish Sanitation Program, and implemented by all shellfish control agencies; gives state shellfish programs current and comprehensive sanitation guidelines to regulate the harvesting, processing, and shipping of shellfish; provides a forum for shellfish control agencies, the shellfish industry, and academic community to resolve major issues concerning shellfish sanitation; informs all interested parties of recent developments in shellfish sanitation and other major issues of concern through the use of news media, publications, regional and national meetings, internet, and by working closely with academic institutions and trade associations. Bureau Director, David Carey, is the Region 2 Alternate Regulatory Representative on the ISSC Executive Board and member of the Model Ordinance Effectiveness Review committee. Bureau staff have been appointed to several important committees and workgroups involved in policy-making at the national level (Aquaculture, Communication, Recall Guidance, and Vibrio Research).

Bureau of Aquaculture Accomplishments

- The Bureau issued **197** Personal Seed Oyster Licenses and **66** Oyster Seed Boat Licenses.
- Staff performed sanitary and records inspections of the 95 shellfish harvest vessels, 45 harvest operations and 30 wholesale dealer/distributors, on a biennial basis as minimally required by the NSSP, along with necessary follow-up inspections throughout the year.
- Bureau staff collected and analyzed 4,852 seawater samples and 172 shellfish tissue samples for fecal coliform bacteria, 29 meat or wastewater samples for MSC (male-specific coliphage) to assess viral impacts, 207 phytoplankton samples for harmful algal blooms, 21 samples for paralytic shellfish poisoning (PSP), and 0 shellfish tissue samples for total *Vibrio parahaemolyticus* (*Vp*) and total *Vibrio vulnificus* (*Vv*).
- Ten Individuals have kelp aquaculture operation certificates and the necessary gear permits. Five individual producers were licensed by the Bureau to harvest and sell Kelp.
- The Bureau is working with Ideal Fish to develop a direct marketing and farm market campaign for its products. Ideal Fish is the first indoor finfish Aquaculture facility permitted in Connecticut, Ideal Fish. Ideal Fish is a recirculating aquaculture systems

company dedicated to bringing fresh seafood to local markets. As the only commercial scale facility of its kind in the Northeast, this state-of-the-art \$14 million dollar operation is producing sustainably raised European Seabass.

- The Bureau issued ten aquaculture producer permits for finfish grown for stocking ponds, in addition to three permits for vocational schools growing finfish for educational purposes.
- The Bureau has enacted and continued to develop comprehensive phytoplankton and biotoxin monitoring programs.

COVID Response Actions Phase 1, 2, 3 Initiatives

In response to the negative market effects of the COVID-19 pandemic, the Department of Agriculture, Bureau of Aquaculture and Laboratory, with collaborating partner the CT Sea Grant Program at UCONN's Avery Point campus, enacted a three phased shellfish Industry COVID-19 Response and Assistance Initiative.

COVID-19 public health mitigation strategies severely impacted Connecticut's shellfish companies. Primary markets for Connecticut shellfish are intermediate local wholesalers and direct sales to the New York and/or Boston Regional Wholesale markets. Restaurants play a significant role in the wholesale market consumption of shellfish via raw bar sales. This avenue of revenue was effectively eliminated with the temporary closure of restaurants in the Northeast and elsewhere in the country.

PHASE ONE:

In the fall of 2019, the Department and CT Sea Grant began collaborating on a grant awarded to fund the development of a statewide Oyster Restoration and Enhancement Plan. Unfortunately, after the project launch, the Pandemic slowed the work of the various comprehensive working group members and partners. Despite this set-back, the Department was able to authorize a COVID-19 Phase One Public Natural Seed Oyster Bed Rehabilitation Initiative utilizing this grant funding.

Phase One of the Rehabilitation/Enhancement project was constructed to provide indirect financial assistance to industry through access to hard clams which, after a required depuration period, can be sold. Hard clam harvest numbers in Connecticut have sharply declined over the past two seasons likely due to recruitment interruptions during the back to back hurricanes in August 2011 followed by Sandy in October 2012. These populations have yet to fully recover.

Phase One designated the enhancement of areas of the State's Public Natural Beds using hydraulic clam dredges. Over the years the State's Natural Oyster Seed Beds in Long Island Sound have silted over with significant biofouling covering the gravel bottom and oyster shell. Clean oyster shell is the preferred surface for oyster recruitment. Companies were assigned specific areas of 7,700 acres of Public Natural Beds located in the Towns of Stratford, Bridgeport, Fairfield, Norwalk, Darien, and Greenwich. Hydraulic dredges use light water pressure to re-suspend bottom sediments dislodging hard clams and oyster shell

covered with biofouling or silt that are collected in the dredge basket. Using hydraulic dredges to rehabilitate the Public Natural Oyster Seed Beds by removing silt, breaking up the biofouling layer smothering the bottom, and cleaning the oyster shells buried in the mud increases the prospect of improved oyster spat recruitment. Once dredge loads were brought on deck, boat crews sorted hard clams from oyster shell and returned oyster shell and any bycatch to the beds. This activity is routinely practiced by the commercial industry on leased beds in oyster recruitment areas and is known to support increased seed oyster recruitment.

Thirteen shellfish companies participated in Phase One. The required relay logs, kept by each firm, reported that approximately two million dollars of hard clam inventory was relayed off the Natural Beds between May 5th and June 25th. Unfortunately, retail sales remain very depressed but, this clam resource has provided some immediate financial assistance and will continue to provide revenue as traditional markets recover.

PHASE TWO:

The second phase of the Rehabilitation Project emerged through our cooperation with Sea Grant. This phase of the project was aimed at performing rehabilitation activities in areas of the Public Natural Oyster Seed Beds where no hard clam resources exist. Sea Grant obtained funding to provide the necessary compensation for a percentage of fuel and wages needed for companies to complete this work. This phase involved running open oyster dredges through the shallow waters of designated areas of the Natural Oyster Seed Beds to dislodge shell from the biofouling and accumulated silt. Twelve oyster companies participated in phase two and received direct cash compensation for performing this enhancement work. A total of \$48,100.00 was paid to the participating shellfish companies in this phase.

PHASE THREE:

The third phase of the Rehabilitation Project was also funded through Sea Grant. This phase stocked six locations, rehabilitated in phase one and phase two, on three of the Public Natural Oyster Seed Beds with spawners for future recruitment. Funds were used for the purchase and planting of three inch, or greater, sized oysters in these areas of the Beds in Darien/Norwalk, Fairfield, and Bridgeport/Stratford. Eight companies participated; selling 1818 bushels of spawner oysters for \$72,720.00.

The Department of Agriculture and Sea Grant cooperatively, through this three-phase program approach, directly impacted 33 individual companies of the 45 independently licensed shellfish operations with either clam resources and/or dollars. Staff and Industry will evaluate the success of the rehabilitation activities of Phase 1-2-3 in late September, when oyster spat recruitment can be visibly seen on the cleaned and planted oyster shell.

Video Documentation

During the Phase 1 Bridgeport Natural Bed Project in which harvesters disturbed sediment and biofouling from oyster shell on the Bridgeport Natural Bed, DA/BA staff documented the process with the SeaView underwater camera. The camera was attached to a sled and towed along the bottom in areas that had not been disturbed and areas known to have

been disturbed. The disturbed areas were determined by mapping shellfish vessel tracks and towing the camera sled in areas of highest density of vessel tracks. As seen in the figures below, undisturbed areas of the natural bed are sedimented over and minimal shell is visible. Disturbed areas have clearly visible shell, which is essential for oyster recruitment.



Figure 1. Bridgeport Natural Bed before mechanical disturbance. Note sediment and minimal exposed shell.

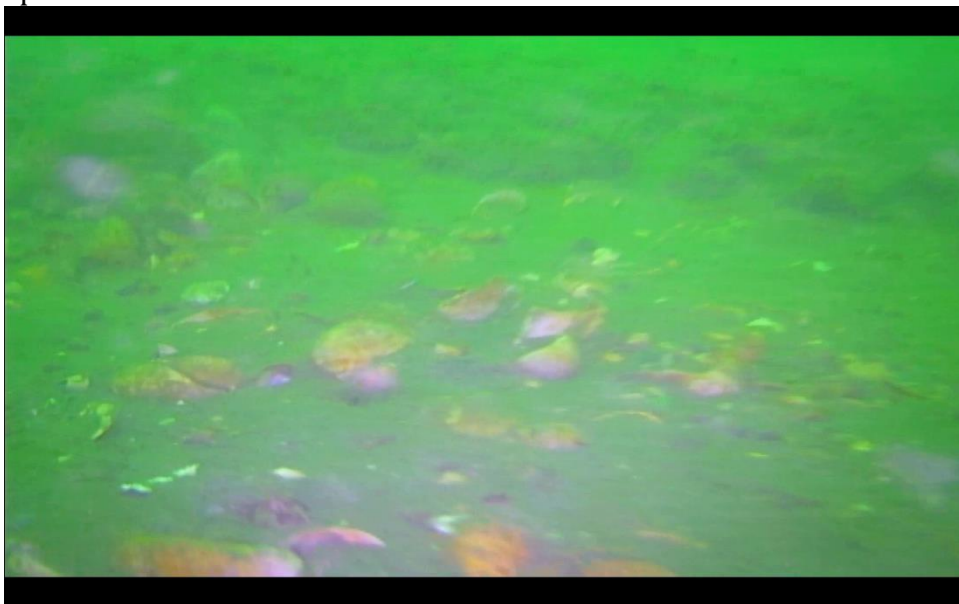


Figure 2. Bridgeport Natural Bed after mechanical disturbance. Note exposed shell, ready for oyster set.

COVID-19 Direct Marketing Guidance

Connecticut's shellfish industry was severely impacted by the COVID-19 situation beginning in early March of 2020. Much of Connecticut's shellfish industry is reliant upon wholesale distribution. Connecticut shellfish is typically shipped out-of-state to wholesale

markets in New York and Boston, before being shipped back into CT for distribution to restaurants. During the COVID situation, many restaurants and retail markets stopped purchasing shellfish, and many businesses were forced to layoff employees.

According to Governor Lamont's COVID-19 Response Executive Order 7H:

Essential workers in the 16 Critical Infrastructure Sectors, as defined by the federal Department of Homeland Security unless otherwise addressed in a prior or future executive order pertaining to the existing declared public health and civil preparedness emergency. Essential Food and Agriculture businesses include the following:

- farms and farmer's markets
- food banks
- food manufacturing, processing, storage, and distribution facilities
- restaurants/bars (provided compliance with all applicable executive orders is maintained)
- all manufacturing and corresponding supply chains, including agriculture

Licensed Shellstock Shippers I operations are considered an Essential Food and Agriculture business, and shellfish sold by these businesses are an Approved food source. These operations may sell directly to the public from either their land-based facility or at a designated pickup location, provided they are selling from an approved conveyance that has been inspected and licensed by DoAG for temperature-controlled storage of shellfish. They may also deliver shellfish direct to the consumer from a DoAG licensed conveyance.

In order to support the industry during these challenging times, the Bureau worked closely with industry to assist them in developing new markets, and developed guidance specifically for direct marketing during COVID. This direct to consumer model helps to protect buyers and farmers from exposure to COVID-19 while allowing these critical agriculture producers to sustain their industry during this public health crisis. This model also allows the shellfish industry to benefit from businesses that have maintained foot traffic during the COVID19 crisis, by permitting them to designate pickup locations at breweries, wineries, land-based farms, restaurants offering take-out, etc. The partnerships that were developed helped to connect the consumer directly to a fresh and local source of food, while this new marketing model helped to sustain the industry while wholesale markets were virtually nonexistent.

The COVID-19 Direct Marketing Guidance for Shellfish can be found at:

<https://portal.ct.gov/-/media/DOAG/COVID/COVID19-Direct-Marketing-Guidance-for-Shellfish-Final-040220.pdf>

Enhanced biotoxin and harmful algal bloom (HAB) monitoring programs increase safety for CT shellfish consumers

Connecticut has a thriving shellfish industry and has reliably produced safe clams and oysters for people to enjoy. Phytoplankton are microscopic organisms that act as the base of the marine food web; a small percentage of phytoplankton are Harmful Algal Bloom (HAB) species. HABs are harmful because they are associated with toxin production, and have detrimental effects on human health and the environment. The DA/BA monitors HABs in Long Island Sound because they can be filtered out of the water column by bivalve shellfish and their toxins can become concentrated in shellfish tissues.

There is a general consensus among scientists that HABs are increasing in intensity and frequency around the world. Marine and/or freshwater HABs impact every single state in the United States. Neighboring New York and Rhode Island have been managing emerging toxic HAB events that have not yet caused closures in Connecticut. The emergence of HABs strains local industries, such as the shellfish industry, and requires additional monitoring efforts by regulatory agencies. The increasing threat of HABs globally, the reoccurrence of many harmful species in New England, and the need for a better understanding of what causes and controls HABs, has led the DA/BA to ensure that staff are continually prepared for potential blooms and any associated consequences for the shellfish growing areas, harvesters, and consumers.

DA/BA initiated the biotoxin monitoring program in 1985 and phytoplankton monitoring program in 1997. While the DA/BA has monitored HABs in Long Island Sound for decades, staff have recently invested in improving the phytoplankton program to include specialized training of one staff member, who acts as the HAB specialist; enhanced and quantitative monitoring of shellfish growing areas; and increased collaboration with state agencies and other shellfish sanitation programs. The DA/BA has continued to improve the program since 2018-19, when one staff member was trained in the identification of over 60 traditional and emerging HAB species, through the 2018 Monitoring and Event Response for Harmful Algal Blooms (MERHAB) course at Bigelow laboratory. FDA funding allowed the DA/BA to purchase a new microscope for HAB monitoring in 2018, and permitted the HAB specialist to attend the 10th U.S. HAB Symposium in November 2019 for networking and educational enhancement. The DA/BA continues to share information about HABs with shellfish harvesters and commission members, state and federal government agencies, other shellfish sanitation programs, and regional researchers.

The DA/BA successfully began enhancing the phytoplankton monitoring program starting in 2019, including shifting from qualitative to semi-quantitative net tows, which provides results in concentrations (cells/liter) and will allow the DA/BA to compare HAB concentrations over short and long-term datasets. The successes have been noted by the FDA in the 2019 Annual Program Evaluation Report (2/28/2020): “The DA/BA published a comprehensive 2019 Harmful Algal Bloom Report. In 2019, the DA/BA revamped the phytoplankton monitoring program to include semi-quantitative sample collection and analysis methods, increased spatial monitoring, and more frequent sampling along the

entire coastline. Additional sample stations were added in approved and conditionally approved shellfish growing areas statewide and a town volunteer sample collection program was instituted to assist in monitoring the safety of recreational areas. In addition, the DA/BA enhanced surveillance prior to major events such as oyster festivals.” The DA/BA has greatly enriched the type and amount of data that is generated by the phytoplankton program. Working to establish quantitative baseline data will be critical for understanding how HAB patterns and distributions change over time. The DA/BA has been collecting monthly samples from all towns with active shellfish programs. Five town shellfish commissions have been trained in phytoplankton collection, which has provided increased coverage of recreational shellfishing areas, with minimal staff time requirements. A minimum of 16 coastal towns are being sampled monthly, which provides information about HAB patterns and understanding of how phytoplankton communities differ throughout Long Island Sound.

In accordance with FDA standards, the DA/BA monitors for multiple HABs, including *Alexandrium* and *Pseudo-nitzschia*, which produce neurotoxins (toxins that target the nervous system). The DA/BA has continued semi-quantitative monitoring in 2020, despite COVID-19 challenges. While the last biotoxin closure occurred in 2003, the DA/BA has instituted a mandatory and a precautionary closure in 2020, making this the busiest HAB season thus far. *Alexandrium* caused a mandatory closure in Mumford Cove, Groton. Mumford Cove is a newly-established conditionally approved seasonal area, and has a rare, sporadic history of closures associated with *Alexandrium*. While it is not unusual that *Alexandrium* could close this area given that it has in the past, the unusual circumstances included that it was occurring by early April, the earliest *Alexandrium* bloom ever recorded in CT; persisted for approximately 1 month; and that shellfish toxin concentrations were the second highest recorded for this area. Mumford Cove was also closed in 1985 and 1992; shellfish reached the highest toxicity in 1985, followed by 2020, and lastly 1992. Palmer Cove, Groton, an adjacent cove, was closed in 1992 and 2003 due to *Alexandrium*, but toxin was last detected below the closure limit in 2019. The appearance of *Alexandrium* and its associated toxin in both coves in recent years suggests that closures could become more frequent. The DA/BA also detected the highest *Pseudo-nitzschia* concentrations since semi-quantitative monitoring was initiated in 2019. In June 2020, the DA/BA detected a maximum of ~135,000 cells/L of *Pseudo-nitzschia*. For perspective, the highest *Pseudo-nitzschia* concentration detected in 2019 was ~14,000 cells/L. Therefore, the DA/BA invested significant time to monitor this bloom, but did not detect the associated toxin. *Pseudo-nitzschia* has become increasingly difficult to manage in New England, ever since it caused unprecedented closures and shellfish recalls in 2016 throughout New England, particularly in Maine. *Pseudo-nitzschia* has caused closures in Maine in the fall and December, Rhode Island in March, and recently New Hampshire and Maine in June. Therefore, it is challenging to predict and requires the close attention that DA/BA has been devoting. Lastly, the DA/BA has been handling an emerging situation regarding cyanobacteria. While cyanobacteria typically form toxic blooms in freshwater environments, recent studies are showing that cyanobacteria and their toxins can move into marine waters and accumulate in shellfish tissues. The DA/BA was notified of a cyanobacteria bloom in ponds and rivers feeding into Long Island Sound in Greenwich, and had the potential to impact shellfish beds. The DA/BA immediately responded and detected

low concentrations of the cyanobacteria toxin, microcystin, in oysters from Greenwich Cove. This is the first precautionary closure related to cyanobacteria toxins in CT shellfish. Despite the adversities that the DA/BA has faced in 2020, staff have continued to protect public health and advance the phytoplankton and biotoxin monitoring programs.

Shellfish Vessel Monitoring System

In accordance with the NSSP MO, the designated authority, DA/BA, must develop and maintain an effective program to control the harvest, transport, replanting, and security of shell stock until the end of complete relay activities to prevent shell stock from being illegally diverted to direct marketing. This is to ensure compliance with the NSSP-MO and to protect public health.

Previously, the department and the DEEP relied on random patrols and a dispatch call in line to monitor vessel activity, as is required under the NSSP-MO, to determine compliance with the federal requirements. The FDA has found this practice noncompliant with National program standards in recent years, and a continued deficiency could result in a prohibition to ship shellfish out of state, inflicting significant harm on the industry.

In October of 2017, the department implemented a voluntary vessel monitoring (VMS) project in conjunction with the dredging of the federal channel in the Housatonic River in Stratford. The VMS units enable the department to ensure the security of the transplanted polluted oysters, and protect depuration practices by ensuring that the transplanted oysters remain planted for a minimum of six months and that unauthorized vessels do not remove oysters prematurely. Beginning with the 2018-19 license year, VMS will be a license requirement for all vessels that conduct relay activity in restricted or prohibited waters.

This program will allow the Department to remain in compliance with the requirements of the National program, while protecting the industry from illegal activities. The Department plans to use the tracking data collected to inform resource management/enhancement efforts.

The Bureau of Aquaculture has overseen the installation of the VMS system on 123 licensed vessels and are determining the scheduling for the remaining licensed vessels.

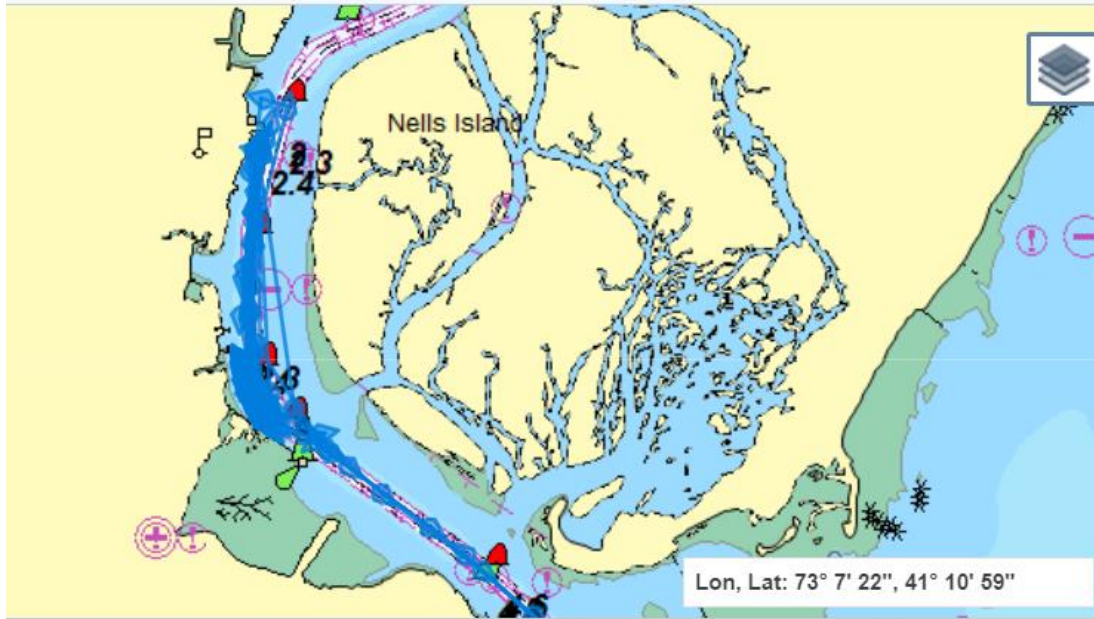


Figure 1. Example vessel track of a vessel working in the Housatonic River navigational channel.

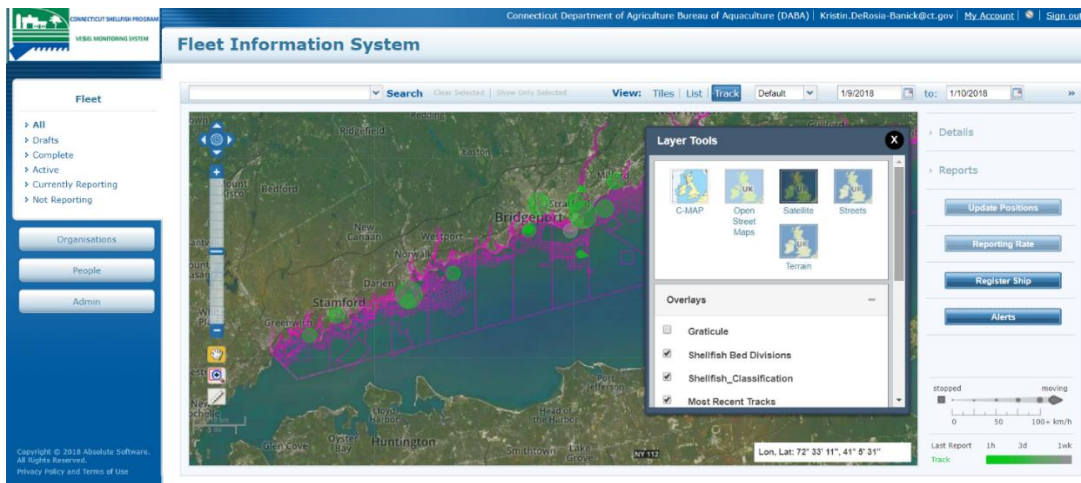


Figure 2. Example dashboard from the Fleet Information System showing the location of active vessels (green) overlaid with shellfish bed boundaries (purple).

Guide to Marine Aquaculture Permitting in Connecticut Updated

The Connecticut Department of Agriculture, Bureau of Aquaculture is the lead state agency for aquaculture development. The DA/BA Director serves as the State Aquaculture Coordinator, and acts as a liaison among local, state and federal permitting officials which comprise the Connecticut Aquaculture Permitting Work Group. The key agencies include the Connecticut Department of Energy and Environmental Protection (DEEP), the U.S. Army Corps of Engineers (USACE) and municipal shellfish commissions. The Work Group

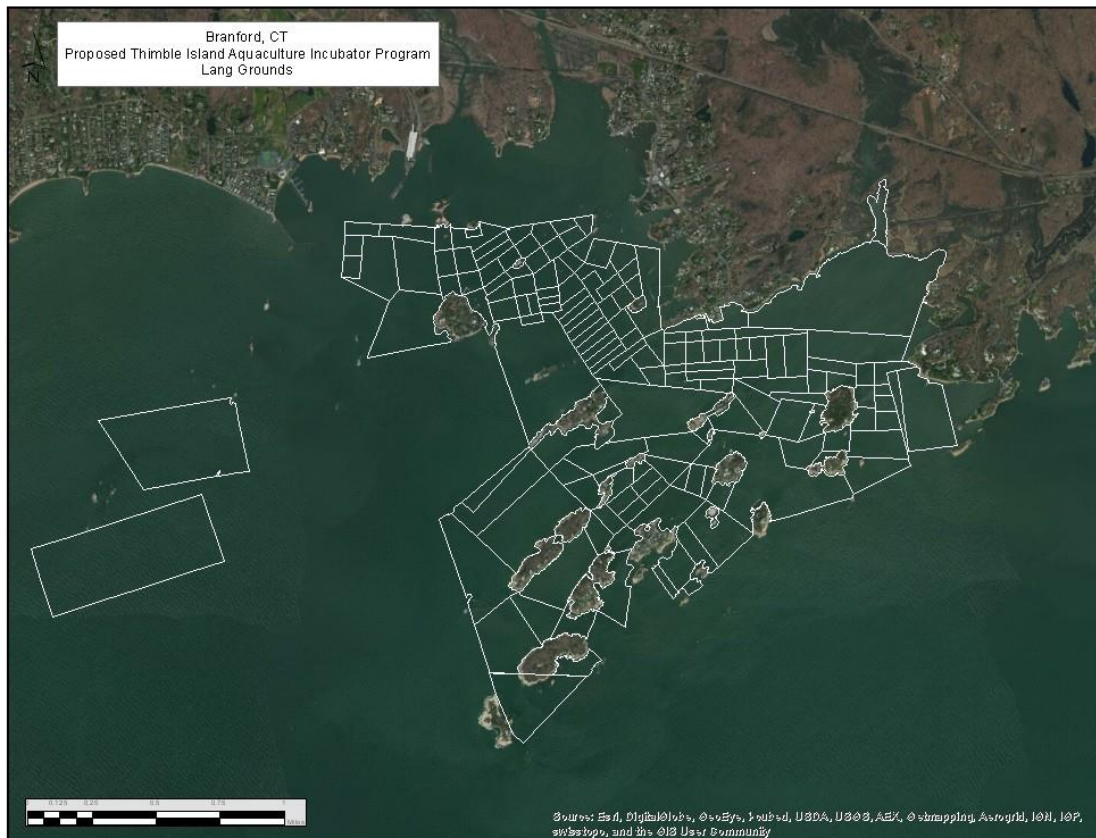
coordinates the regulatory review process with other local, state and federal agencies depending on the nature of the proposed aquaculture activity.

The Guide to Marine Aquaculture Permitting is in final publication after a brief public comment session and will be posted to Department website as soon as it is available.

Branford Sustainable Aquaculture Initiative

The acquisition of Town Shellfish Franchise grounds presents a unique opportunity to grow the shellfish industry in Connecticut. Underwater lands of Long Island Sound are held in Public Trust by the State of Connecticut, however shellfishing rights were legislated to the Town through the 1855 Act “regulating and protecting the planting of Oysters.” The Town Shellfish Commission designated those shellfish rights to individual applicants, those rights continue in perpetuity and can be transferred.

The Department of Agriculture acquired 900 acres of this shellfish franchise ground in Branford in 2014. The Department purchased those rights to create an aquaculture incubator area and will administer the planting and cultivating of shellfish on the parcels through licenses allowing individuals to conduct shellfish activities. The intent is to foster the development of new commercial aquaculture enterprises, public awareness of and support for local and sustainable aquaculture, and public stewardship of the environment.



The Branford Sustainable Aquaculture Initiative will create local economic and

environmental benefits via:

- Small-scale cage and bottom culture of oysters and clams,
- Diversification into seaweed culture and mussel production,
- Expansion and enhancement of public recreational shellfishing areas,
- Collaborative research projects between the Department of Agriculture, National Marine Fisheries, State and private universities, and Connecticut Sea Grant,
- Potential development of new species and culture technologies,
- New opportunities for Education and Workforce training for the Regional Science Agriculture high schools (Bridgeport, New Haven, and Groton), with an aquaculture focus, and creation of a mechanism for entry into commercial aquaculture ventures, and
- Develop partnerships with Non-Government Organizations, Conservation, and Environmental Organizations.

Currently, Ten five acre parcels have participants planting and cultivating shellfish.

Shellfish Growing Area Program

The Bureau of Aquaculture continues to expand the use of testing shellfish, seawater, and municipal wastewater effluent samples to determine levels of Male-Specific Coliphage (MSC). MSC is an indicator organism that has been accepted by the NSSP for detecting levels of enteric viruses that may be present in growing areas or shellfish tissues. Coliphages are bacterial viruses that infect and replicate in Escherichia coli, and are often found in high concentrations in municipal wastewater, and to a lesser degree in human and animal feces. Because traditional bacterial monitoring does not accurately indicate the presence of non-bacterial organisms such as human pathogenic viruses, coliphages are potentially important microorganisms for monitoring the microbial quality of waters and shellfish. This testing also provides a way for staff to assess public health impacts from pathogenic viruses, such as the Norovirus, by using MSC as an indicator organism.

Mapping and Assessment of Natural Oyster Beds

The Bureau has additionally been awarded a grant for Mapping of Natural Oyster Beds in Connecticut from Connecticut Sea Grant. Enabling the purchase of a SeaViewer underwater video camera and GPS system. With this new technology, shellfish program managers at the DA/BA will be able to collect high-definition video over thousands of acres of natural beds, post-process the data and categorize according to bottom type through visual analysis, and then convert that data to geographic information. These maps could be made available to industry, shellfish commissions, partner agencies and the public to inform future restoration and management efforts across the state. The DA/BA would offer this mapping service to assist municipal shellfish commissions with shellfish bed enhancement and restoration efforts.



Figure 1. Bridgeport Natural Bed before mechanical disturbance. Note sediment and minimal exposed shell.

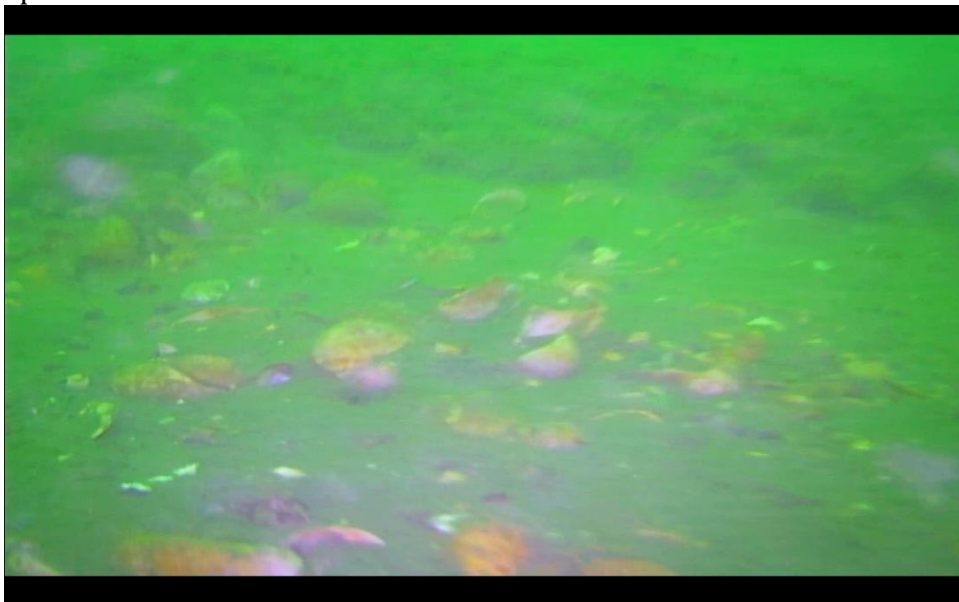


Figure 2. Bridgeport Natural Bed after mechanical disturbance. Note exposed shell, ready for oyster set.

Connecticut's *Vibrio parahaemolyticus* Control Plan

Connecticut shellfish growing waters in Westport, Norwalk and Darien were the source of at least 23 confirmed cases of *Vibrio parahaemolyticus* (*Vp*) during the summer of 2013, with another additional 15 cases potentially linked to Connecticut waters that year. This outbreak occurred with a *Vibrio parahaemolyticus* Control Plan (VPCP) in place which limited time from harvest to refrigeration to 5 hours, and required oysters to be cooled to $\leq 50^{\circ}$ within 5 hours of refrigeration. The 5 hour limit was inadequate to prevent the 2013 outbreak from occurring, and a more stringent control plan has been required in the outbreak area in the years since the 2013 outbreak. Prior to 2013, only sporadic cases had

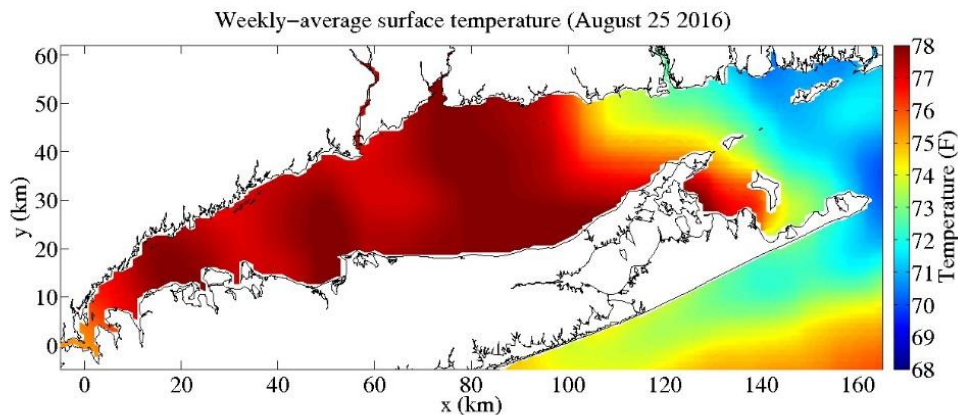
been linked to Connecticut growing areas. This area now operates with a VPCP requirement that all oysters reach an internal temperature within one hour of harvest.

In 2015, the DABA was able to further refine the VPCP implementation triggers for the outbreak area from a date to a water temperature trigger. This new trigger was based upon new data developed using the Long Island Sound Vp Prediction System (Whitney, Ward, & DeRosia-Banick, 2016). In 2015, Connecticut's VPCP for the 2013 outbreak area was triggered when surface seawater temperatures reached 68°F (20°C) as measured using the NASA G1SST product [incorporated into the Long Island Sound hydrodynamic model] and the NOAA BRHC3 coastal buoy located in Bridgeport, CT. The use of a trigger based on environmental conditions rather than a pre-determined start date has proven effective.

Vp Prediction System Development

We have begun development of a Vp prediction system for shellfish in LIS. **At this stage, the results below should be viewed as demonstrating prediction techniques. It is unclear whether these results are representative of actual conditions; further analysis and comparison with observations are needed. These demonstration results are not intended for use in management decisions or for informing shellfish-related issues.** This prediction system involves the following steps:

1) Daily sea-surface temperature (SST) data are acquired from the [G1SST product](#) (from the NASA Jet Propulsion Laboratory) that includes observations from satellites. The prior week (7 days) of SST are averaged together to construct the weekly-averaged surface temperature field throughout LIS.



Surface temperatures from G1SST satellite-observational product. Temperatures are averaged over the previous 7 days.

Figure 1. Long Island Sound Vp Prediction System, Whitney, Ward and DeRosia-Banick, 2016. 1) Daily sea-surface temperature (SST) data are acquired from the G1SST product (from the NASA Jet Propulsion Laboratory) that includes observations from satellites. The prior week (7 days) of SST are averaged together to construct the weekly-averaged surface temperature field throughout LIS.

Oyster production areas not implicated in the 2013 outbreak operate under a general state-wide *Vibrio parahaemolyticus* control plan, which requires a five hour limit from time of harvest to temperature control (either mechanical refrigeration or icing), shading shellfish on the deck of harvest boats, spraying shellfish with water from approved growing areas to keep them cool, monitoring of shellstock temperatures once on board, and reducing internal temperatures of shellfish to less than 50°F within 5 hours of placing under temperature control.

The number of *Vibrio* illnesses associated with shellfish growing areas within the municipalities of Westport, Norwalk and Darien was reduced from 22 during 2013 to one

(1) case in 2014, two (2) in 2015, one (1) in 2016 and 2017, and none in 2018, achieving an illness reduction of 95.6% in 2014, 2016, and 2017, and 100% in 2018 compared to the 2013 season. Clinical isolates associated with confirmed cases linked to Connecticut growing areas in 2014, 2015 and 2016 provide evidence that the O4:K12 virulent outbreak strain is still present in Connecticut growing areas. Based on the results of a post-harvest controls study and on recent illness data, experts in the field believe that these findings provide convincing evidence that the use of ice slurry for rapid cooling has prevented additional outbreak events during the years since the 2013 event.

Connecticut's shellfish industry produced 348,000 100 count bags of oysters in 2016 and 310,000 100 count bags in 2017. In the years 2008 to 2013 the shellfish industry produced approximately 200,000 100 count bags of oysters.

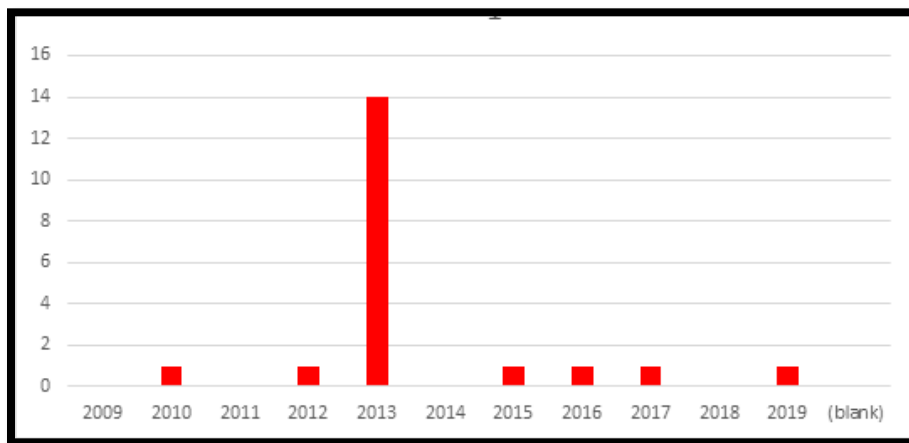


Figure 2. Confirmed number of V. parahaemolyticus cases linked to Connecticut shellfish each year, 2009 through 2019.

Aquaculture Dairy Laboratory Accomplishments

Bureau of Aquaculture staff serve as the Dairy Laboratory Evaluation Officer (CT LEO) for the State of Connecticut and are responsible for evaluating all Appendix N Facilities and Certified Dairy Laboratories along with analysts performing milk laboratory test methods in accordance with the requirements of the Grade "A" Pasteurized Milk Ordinance.

On a bi-annual basis, the Connecticut Laboratory Evaluation Officer schedules and performs laboratory evaluations of both FDA certified appendix-n screening facilities and certified laboratories. There are a total of 2 certified laboratories and 10 screening facilities evaluated. Half of these facilities will be evaluated in 2020. In addition, the CT LEO continues to speak with both new farms and new dairy processing plants about becoming a FDA certified Grade A facility.

In addition to the evaluations, the CT LEO organizes proficiency testing for the labs, certifies all the analysts before coming online to perform the procedures; this includes providing written exams and practical's they must pass in order to become certified in the state. The LEO also helps new labs and already certified facilities develop and fine-tune all quality control/quality assurance operating procedures at their facility. Connecticut as a

total of 61 certified analysts that are evaluated every two years. In 2020, 12 new analysts became certified to process dairy samples in the laboratory so far. In 2020, a new antibiotic testing platform was purchased with the help of FDA funding. This will be used this year to replace a paid splits program with a free service provided by the CT LEO. This will be available for all Grade A facilities that are certified for antibiotic screening.

The CT LEO also visits intra-state farms to help educate the farms about the necessity of antibiotic screening. The LEO also makes and organizes split samples for these facilities to participate in to effectively measure their efficiency in processing samples for antibiotic detection. These split samples will be done in November.

The CT Laboratory Evaluation Officer was recertified in July of 2020 by the FDA through an online program. This is done every three years.