



CHANGING
Maryland
for the Better



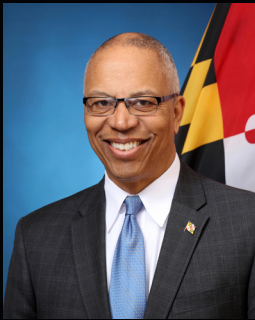
2018



Maryland Department of Agriculture | 2018 Annual Report



Governor Larry Hogan



Lt. Governor Boyd K. Rutherford



Secretary Joseph Bartenfelder



Deputy Secretary Julianne A. Oberg

MISSION STATEMENT

To provide leadership and support to agriculture and the citizens of Maryland by conducting regulatory, service and educational activities that assure consumer confidence, protect the environment, and promote agriculture.

VISION STATEMENT

To achieve excellence in programs and in services that preserve and protect agricultural resources and the environment, promote profitable agriculture and consumer confidence, and enhance the quality of life for all Marylanders.



Maryland
Department of Agriculture

Wayne A. Cawley, Jr. Building
50 Harry S Truman Parkway
Annapolis, MD 21401-7080
Baltimore/Annapolis 410-841-5700
Washington Metro Area 301-261-8106
Maryland Relay Service (TTY Users) 800-735-2258
Toll Free 800-492-5590
Fax 410-841-5914

www.mda.maryland.gov
mda.news@maryland.gov
On Twitter @MdAgDept
On Facebook www.facebook.com/MdAgDept

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*Front cover photo— Billy Rice with grain from his Maryland farm
Back cover photo— Soybeans from Seneca Ayr Farm (Laytonsville, Maryland)
Photos by Edwin Remsberg, www.remsberg.com*



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GREETINGS,

On behalf of Governor Larry Hogan and Lt. Governor Boyd Rutherford, it is my pleasure to present the Maryland Department of Agriculture's Annual Report for FY 2018.

During FY 2018, our department continued to broaden markets for our farmers and producers throughout the region and internationally. As of July 1, 2017, that includes our historic seafood industry. During the 2017 Legislative Session, the General Assembly passed our departmental bill to move the seafood marketing program back to our department. This move has been met with enthusiasm from our watermen and seafood producers.

I am also happy to report that we continue to make progress on restoring the health of the Chesapeake Bay, and this is due in large part to the efforts of our farmers. Through our use of best management practices and initiatives aimed at curbing nutrient runoff, Maryland has become the national model for sustainable agriculture.

I am very proud of our administration's many accomplishments, but I know that our job is far from over. We look forward to continuing to work on your behalf and to make sure that rural Maryland stays open for business!

Sincerely,

Joe Bartenfelder
Maryland Secretary of Agriculture



2018 Annual Report | Office of the Secretary

MARYLAND AGRICULTURAL LAND PRESERVATION FOUNDATION (MALPF)

The Maryland Agricultural Land Preservation Foundation (MALPF) is one of the oldest and most successful farmland preservation programs in the country. MALPF was created in 1977 by the Maryland General Assembly. MALPF's primary purpose is to preserve productive agricultural land and woodland to provide for the continuing production of food and fiber for the citizens of Maryland.

MALPF purchases agricultural preservation easements that forever restrict development on prime farmland and woodland and has permanently preserved land in each of Maryland's 23 counties. In Fiscal Year 2018 alone, MALPF settled 56 easements and preserved 7,402 acres of farmland. Since its inception through the end of FY 2018, MALPF has purchased easements on a cumulative total of 2,302 properties and permanently preserved 312,787 acres of farmland at a public investment of over \$728 million.

MALPF and its other state agency and local government partners are working to meet a legislative goal (SJ 10, 2002) of preserving 1,030,000 acres of agricultural land by 2022. As of June 30, 2018, Maryland has preserved 650,544 acres of agricultural land under MALPF, Rural Legacy, GreenPrint, and through local land preservation and transfer of development rights programs. This represents over 63 percent of the goal.

At the end of FY 2018, MALPF's former Executive Director Carol West retired. Michelle Cable, who has been with the program since 2011, assumed the position in July 2018.

This year also brought great news for MALPF, as for the first time in 10 years full funding for the program was restored. MALPF is now, once again, able to return to single-year application cycles beginning in FY 2019. MALPF staff has worked diligently with our sister agencies and county partners to prepare for the changes necessary to move back to an annual application cycle. The program anticipates funding levels to remain steady, enabling MALPF to sustain single-year application cycles for the foreseeable future. With the return to an annual application cycle, the MALPF program will be able to increase the rate at which we are able to protect Maryland's agricultural lands.

GOALS AND OBJECTIVES	2018 Actual
Output: Total Number of Easements, Cumulative	2,302
Outcome: Total Acres Under Easements	312,787

OFFICE OF THE ATTORNEY GENERAL

The Assistant Attorneys General assigned to the Maryland Department of Agriculture (MDA) provided counsel and advice to the Maryland Secretary of Agriculture and other department officials in carrying-out the department's broad statutory mission to promote agriculture while protecting animal health, the environment, farmland, and consumers.

In addition to advising the department's Secretary, Deputy Secretary, and Assistant Secretaries on such matters, the Office of the Attorney General (OAG) provided counsel and advice to the State Veterinarian, the State Chemist, and the Chief of Weights and Measures.

The OAG also advises the many programs that the department administers. The OAG assisted the department's Animal Health Program in drafting regulations, legislation, and quarantine orders to control for Avian Influenza and other poultry diseases. The OAG advised the department's Pesticide Regulation Section on enforcement actions it took against pesticide businesses and other licensees that violated the Pesticide Applicator's Law. The OAG reviewed for legal sufficiency solicitations issued by the department's Marketing program designed to promote Maryland agricultural products. The OAG performed similar work for MDA's Animal Waste Technology Fund in its effort to find technologies that can convert animal wastes into energy or otherwise dispose of this material in an innovative manner. The OAG assisted the department's Office of Resource Conservation in its administration of the Water Quality Improvement Act of 1998, including enforcement actions it took against farm operators who violated the state's Nutrient Management Law. The OAG also reviewed for legal sufficiency agreements that Resource Conservation entered into with other state agencies, soil conservation districts, and landowners in its effort to address nonpoint source pollution.

The OAG also advised the many boards housed within the department. For the Maryland Horse Industry Board, the OAG advised on enforcement actions it took against stables that violated the Maryland Horse Industry Law. The OAG reviewed for legal sufficiency grant solicitations issued by the Spay and Neuter Board. For the Maryland State Board of Veterinary Medical Examiners (SBVME), the OAG assisted in its mission to protect the public and animal health and welfare. In its role as Board Counsel to the SBVME, the OAG advised the SBVME on legal issues that came before the Board, including compliance with the Open Meetings Act and Public Information Act. The OAG also helped draft regulations governing the practice of veterinary medicine, including regulations governing mandatory reporting of animal cruelty. In its role as Board Prosecutor, the OAG prepared charges and prosecuted disciplinary cases against licensed veterinarians and veterinary hospital facilities, and advised the SBVME regarding informal actions intended to improve the practice of veterinary medicine.

The OAG also assisted the Maryland Agricultural Land Preservation Foundation (MALPF) in meeting its mission, which includes preserving productive farmland and woodland for the continued production of food and fiber for all of Maryland's citizens. MALPF now holds easements on more than 2,000 farms covering more than 300,000 acres at a cost to the state of approximately three-quarters of a billion dollars. The OAG advised the MALPF Board of Trustees at its monthly meetings on matters affecting easements that come before the Board. The OAG also successfully defended in circuit court a Petition for Judicial Review seeking to overturn MALPF's decision to amend one of its easements.

The OAG also defended separate claims filed against the department and the Baltimore Soil Conservation District (SCD) in state court under the Maryland Tort Claims Act. In MDA's case, the OAG successfully moved to have the department employee, who was alleged to have been negligently operating a state vehicle, dismissed from the case; and the OAG negotiated a settlement in the remaining claim against the department. In the Baltimore SCD case, the OAG successfully moved to have the soil conservation district dismissed from the case and judgment entered in its favor. The Baltimore SCD, Baltimore County, and others were alleged to be responsible for the death of a woman whose vehicle was struck by a tree, which was struck by another tree located on land subject to an easement held by Baltimore County.

The OAG also defended a discrimination claim filed against the department in the U.S. District Court for the District of Maryland, charging that MDA violated the Americans with Disabilities Act and the Civil Rights Act of 1964. The OAG successfully had this claim against the department dismissed.

In addition to assisting the department, the OAG assisted the Rural Maryland Council (RMC) and many of the 24 soil conservation districts in the state. Among other things, the OAG successfully represented one SCD in responding to a discrimination claim filed against it with the Maryland Commission on Civil Rights. The OAG, as noted previously, also successfully defended a tort claim filed against another SCD. Finally, the OAG reviewed for legal sufficiency the RMC's agreement with another governmental unit to update its Ruralstat Website.

GOVERNMENT RELATIONS

A point of focus for the government relations team in Fiscal Year 2018 continues to be education and outreach to elected officials. The team continues to invite relevant local officials to join the department at a number of events throughout the state.

2018 LEGISLATIVE SESSION

During the 2018 Legislative Session, the department's government relations staff attended numerous bill hearings, sub-committee workgroups, and full committee voting sessions. Secretary Bartenfelder and Maryland Department of Agriculture (MDA) staff also presented agricultural briefings to multiple committees on the status of Maryland's agricultural community and the department's function as a state agency. The department played an important role in educating legislators on a number of bills, which would have had a direct negative impact on the agriculture industry and on the operational and fiscal functions of the department.

The department put forward one departmental bill during the 2018 legislative session that was adopted by the General Assembly:

- **HB 252 – Definition of Agritourism** – establishes a model definition in the Land Use article for county governments to adopt through their legislative process as a local ordinance, resolution, law, or rule.

Governor Hogan's budget also provided historic support to rural Maryland in his proposed FY 2019 budget. This included \$6 million for the Rural Maryland Prosperity Fund, making him the first Governor in the state's history to fully fund this critical program. The budget also included \$8.5 million for the Maryland Agricultural Water Quality Cost-Share (MACS) program, which provides farmers with grants to cover up to 87.5 percent of the cost to install conservation measures – known as best management practices – on their farms to prevent soil erosion, manage nutrients, and safeguard water quality in streams, rivers, and the Chesapeake Bay.

The department also monitored a number of bills considered by the General Assembly in 2018. For a full list of those bills and any comments from the department, please visit: mda.maryland.gov/about_mda/Pages/2018-Legislation.aspx

On Earth Day, the department hosted officials from the Delaware, Virginia, West Virginia, Pennsylvania, and New York Departments of Agriculture for an annual meeting to discuss issues facing agriculture throughout the region. This year's meeting featured discussions with officials from the Environmental Protection Agency (EPA) and a special visit from U.S. Secretary of Agriculture Sonny Perdue. The group discussed a wide range of issues from challenges facing dairy farms to the federal Farm Bill.

COMMUNICATIONS AND PUBLIC INFORMATION

The Communications and Public Information Office serves as the department's liaison to the media, government agencies, elected officials, the agriculture industry, agency employees, and the general public. Its goal is to ensure all stakeholders understand the state of Maryland's agriculture industry, department activities, and the department's policy initiatives.

MEDIA MONITORING

The Communications Office regularly distributes news releases to traditional media outlets about agency programs, activities, and announcements. The office uses a media monitoring system to track and research media contacts, distribute news releases, maintain media lists for targeted stories, and distribute news clippings of interest to the agency and its

constituencies. During Fiscal Year 2018, staff distributed 175 news releases to nearly 400 news outlets and interested parties, which generated 246 logged inquiries from the media. Each business day, relevant news stories are identified and distributed to all staff and other interested parties.

NEWS STORIES

The Communications Offices handled a variety of inquiries throughout FY 2018. Highlights included:

- Coverage of the H2-B visa shortage and its effect on Eastern Shore crab houses. This labor shortage had a significant impact on Maryland's iconic seafood industry and caused many operations to close for the

season. This story gained national media attention and led to the Board of Public Works granting \$375,000 in additional funding to promote the industry. MDA is currently working with Maryland Public Television on a documentary about the labor shortage.

- In September 2017, the state experienced an outbreak of swine influenza that affected multiple county fairs including Charles, St. Mary's, Anne Arundel, and the Great Frederick Fair. In all cases, swine exhibits were cancelled and any pigs on the premises were placed on a hold order. The department worked closely with Maryland Department of Health, local health departments, and fair officials to monitor the situation and provide updates as needed. This attracted a significant amount of press coverage from local outlets in the affected areas.
- The impending emergence of spotted lanternfly garnered a significant amount of media attention in FY 2018. Though it had not yet been discovered in Maryland, there are established populations in Pennsylvania, Delaware, Virginia, and New Jersey. This invasive pest poses a major threat to orchards, vineyards, and other agricultural operations. MDA has focused on proactive public outreach and education to raise awareness and encourage citizens to be on the lookout.
- Unscheduled mosquito sprayings are conducted in areas not typically sprayed after a human or a mosquito pool tests positive for West Nile virus or Zika virus. During the year, the Communications Office posted information on any unscheduled spray activity on the agency website and social media platforms as well as through news releases.
- Communications surrounding various buy local promotions, including the Buy Local Challenge, the Governor's Buy Local Cookout, the Maryland's Best Ice Cream Trail, and farmers' market activities and offerings; as well as Homegrown School Lunch Week, the Farm to School program, and the Maryland's Best Homegrown By Heroes program.

DIGITAL ENGAGEMENT

During FY 2018, the Communications Office continued to strategically integrate its online presence (i.e. website and social media platforms) under the overarching practice of digital engagement. Rather than each platform having its own goals and metrics, the department now uses them together to create more comprehensive, coordinated, and far-reaching messaging. The goal of the agency's digital engagement is to ensure that the public sees this agency as the authoritative,

honest, credible source for information about the agricultural activities, services, regulations, and issues under the agency's purview. The website is the home base, the place where all other digital platforms lead.

Website. In FY 2018, the Communications Office has continued building upon the agency's website re-design from FY 2015. This new design makes it easier to share content across platforms and is more accessible to mobile users, which make up an increasing share of the site's traffic.

There were 305,130 sessions on the site during FY 2018 – down 38,082 (-11 percent) from the year before. Of this year's visitors, 109,191 (36 percent) came to the site more than once. About 37 percent came to the site through mobile devices – up 2 percent over last year.

This year, 11,210 sessions came via Facebook referral, down 29 percent from FY 2017. Another 1,955 came from Twitter, which is down 24 percent from last year.

Note: The Maryland's Best website is a marketing website, designed to connect consumers with producers rather than to promote agency information. It is hosted by a private vendor and populated by the marketing office.

Social Media. More and more organizations, agencies, nonprofits, and regular people are communicating via social media. Traditional media as well are moving to online, digital platforms. By its nature, social media is fast moving and immediate. Rumors and misunderstandings can "go viral" very quickly. By being online and engaged with a following, the department cannot only become part of relevant discussions, it can also stop bad information from taking off. The department's social media activities allow the agency:

- To maintain a constant and consistent presence in online communities and discussions;
- To provide credible information directly to the public, without relying solely on the media;
- To monitor trends and issues in public discourse, to correct rumors and provide alternative viewpoints on emerging controversies;
- To improve the image and increase citizen understanding of agriculture;
- To regularly and routinely – both seriously and informally – engage citizens in a variety of issues; AND
- To continually promote the agency's website as the authoritative source of information.

The department continued to expand its social media presence during FY 2018 with growing followings on Twitter and Facebook and a less prominent presence on Instagram, Flickr, YouTube, and Soundcloud. These social media platforms provide the agency direct access to a new, younger, more tech savvy audience.

- MDA's official Facebook page ended FY 2018 with 11,210 followers (10 percent increase). MDA's official Twitter feed ended the year with 13,782 followers (22 percent increase).

Agency Social Media Accounts. The department continues to maintain several program-specific accounts in addition to its official Facebook and Twitter.

Twitter.

- @MdAgDept – Main Maryland Department of Agriculture account
- @MdsBest – The department's marketing office account
- @MdEquines – The Maryland Horse Industry Board account
- @MdFarm2School – The Farm to School Program account
- @MdAgMosquito – The Mosquito Control program account.
- @MdGypsyMoth – A small feed that live tweets when planes are spraying trees and forests for gypsy moth.

Facebook.

- Maryland Department of Agriculture
- Maryland Horse Industry Board
- Maryland Farm to School
- Maryland's Best

Note: The department also maintains Flickr, Instagram, YouTube, and Soundcloud accounts.

Emergency Management. Planning for emergency communications in the event of plant and animal disease outbreaks, as well as natural disasters, is an important component of the program. The office is actively involved

in several multi-agency efforts to refine response and communications plans in the event of an animal disease outbreak or natural disaster. The Communications Office also assists in statewide emergency management efforts. Staff is responsible for assisting the Maryland Emergency Management Agency (MEMA) Joint Information Center. When/if necessary, staff handles information requests from traditional and social media and the public during times of emergency and monitors emergency events and helps manage rumor control.

Special Projects for FY 2018. The introduction of High Path Avian Influenza that entered the United States in December 2014 and moved swiftly across the country put the department on special alert, and remains an animal health priority. The Communications Office worked closely with Animal Health staff to develop and print various materials, encouraging both commercial and backyard poultry growers to use enhanced biosecurity practices. The department also used the website and social media to post frequent reminders and updates about biosecurity practices.

The Communications Office continued to work closely with its counterparts at the Maryland Department of Health and local departments of health as part of the state's response to West Nile virus, Zika virus, and other mosquito-borne diseases. A major part of this effort focused on outreach and education.

The department serves as the co-producer with Maryland Public Television (MPT) in the 13-part television series called "Maryland Farm and Harvest," which debuted in November 2013. The Communications Office is the lead contact working with MPT. The series enjoyed continued success during its sixth season, which began November 2018. It is MPT's highest-rated locally produced show with more than 4 million viewers.

The office also represents MDA with exhibits at the Maryland State Fair and conferences sponsored by the Maryland Municipal League, the Maryland Association of Counties, and the Maryland Farm Bureau.

During the year, staff also represented the agency on the Maryland Agricultural Education Council. Additionally, staff is actively involved in the membership of the Communications Officers of State Departments of Agriculture.

ADMINISTRATIVE SERVICES

The Office of Administrative Services manages all technical and support services for the department. It is comprised of four sections – Fiscal Services, Central Services, Emergency Management, and Human Resources.

Fiscal Services handles all centralized accounting transactions for the agency. This encompasses all phases of the operating and capital budgets, federal grant financial reporting and billing, accounts receivable, accounts payable, travel reimbursement, corporate credit card monitoring and auditing, and employee payroll.

Central Services manages facilities, records, inventory, telecommunications, warehousing, the agency motor fleet, and the distribution of supplies and mail. The office also oversees departmental procurement and is responsible for the maintenance of facilities. The motor pool provides quality

maintenance and repairs of the department's 249 vehicles in addition to semi-annual inspections on all vehicles. The departmental fleet traveled more than 2.2 million miles last year.

Emergency Management for the department addresses all emergencies within the department. The department is in the process of completing a new management plan that will be tailored to the department and in concert with the statewide emergency operations plan. Additionally, the department continues to provide annual training and drills for first responders.

The Human Resources Office facilitates recruitment and compensation. MDA has 352 permanent employees and a varying number of contractual employees over the course of the year.

MDA's IT functions have been transitioned into DoIT. This transition began in FY 2016 and was completed in FY 2018.

MARYLAND AGRICULTURAL COMMISSION

The Maryland Agriculture Commission is an advisory group to the Maryland Secretary of Agriculture. Its 25 members represent the state's major commodity groups as well as representatives from the University of Maryland, consumer interests, and various other agricultural business segments.

The commission meets every month besides April, July, and September to discuss issues of agricultural consequence. This year the commission had notable speakers from and subsequent in-depth discussions on: the Maryland Agricultural Education Foundation (MAEF), Maryland Agricultural & Resource-Based Industry Development Corporation (MARBIDCO), the Business, Economic, and

Community Outreach Network (BEACON) at Salisbury University, Grow & Fortify, Maryland Agriculture Law Education Initiative (ALEI), and the University of Maryland Extension's Food Supplement Nutrition Education (FSNE) program.

These topics along with reports from each of the represented commodity and business groups keep the commission proactive with agricultural issues and assure the fulfillment of the commission's statutory mission. In addition, the commission conducted its bi-annual farm tours in Baltimore City and Anne Arundel County in the spring and Talbot and Caroline counties in the fall.

MARYLAND YOUNG FARMERS ADVISORY BOARD

The Maryland Young Farmers Advisory Board is an advisory group to the Maryland Secretary of Agriculture and the Maryland Agricultural Commission. Its eight members represent young farmers from across Maryland. The board also includes representatives from the Maryland Farm Bureau, Maryland Department of Natural Resources Forestry

Program, Maryland Department of Commerce, and Maryland Department of Agriculture.

The advisory board meets quarterly and discusses current agriculture issues relating to Maryland Young Farmers. This year the board heard presentations and conducted

subsequent in-depth discussions about: Grow & Fortify, the Consumer Education Campaigns, and Maryland's Watershed Implementation Plans for agriculture. A few of the board members were also able to join the Maryland Agricultural Commission on their spring tour of Baltimore City and Anne Arundel County.

These topics along with reports from each young farmer member and agency representatives keeps the board current with young farmer challenges and opportunities and ensure the fulfillment of the board's mission.

GOVERNOR'S INTERGOVERNMENTAL COMMISSION FOR AGRICULTURE (GICA)

The Governor's Intergovernmental Commission for Agriculture was established on June 29, 2006, to "promote the economic profitability of agriculture in the state by ensuring that all appropriate state agencies work in a cooperative, coordinated manner with local government and industry groups in planning, implementing, overseeing, and evaluating intergovernmental initiatives related to agricultural affairs of the state."

The commission met once during Fiscal Year 2018 on February 14, 2018. The following presenters touched on a wide-range of areas that are important to the agriculture community.

- George Mayo, Executive Director, Maryland Agricultural Education Foundation, "Promoting the understanding and appreciation of the importance of agriculture in our daily lives"
- Laurie Adelhardt, Co-Founder, My Maryland Farmers, "Singing Outside the Choir"

On May 15, 2018, the commission was invited to attend the signing ceremony for a bill that establishes a model definition for agritourism in the Land Use article for county governments to adopt through their legislative process as a local ordinance, resolution, law, or rule. The bill was submitted by the Maryland Department of Agriculture and is based on language developed by GICA during FY 2017.

USDA-NATIONAL AGRICULTURAL STATISTICS SERVICE (NASS)

The Maryland field office of the U.S. Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS) – which has offices in the Maryland Department of Agriculture's headquarters building in Annapolis – provides the public with data relating to the production of most crops grown and livestock raised in the state. Annual information is provided on the general economic well-being of the state's agricultural sector. NASS statistics are used to administer and support USDA farm programs that benefit Maryland farmers, to determine the feasibility of new ventures affecting the state's farmers, and to direct program research and development. NASS has a rich history of collecting and distributing agricultural statistics, dating back more than 150 years. Each year the employees of NASS conduct hundreds of surveys and prepare reports that impact every facet of Maryland's agricultural community.

Its mission to provide timely, accurate, and useful statistics in service to U.S. agriculture would not be possible without the voluntary cooperation of Maryland farmers who take valuable time to respond to NASS surveys.

Agriculture generated more than \$2.2 billion in cash receipts for the state's farmers, not accounting for the additional impact provided by related jobs and services. Maryland's leading cash commodities are poultry/poultry products, greenhouse/nursery/mushroom products, corn, meat/other livestock, soybeans, and dairy products. The Maryland field office of NASS estimated that there were 12,200 farms in 2017 with an average size of 166 acres. Total land in farms in Maryland was 2.03 million acres – one third of the state's entire land area.



2018 Annual Report | Office of Marketing, Animal Industries, and Consumer Services

AGRICULTURE MARKETING AND DEVELOPMENT

The goal of the Maryland Department of Agriculture's Marketing Section is to develop markets for Maryland agriculture and to connect farmers, watermen, and food producers to markets. Through this economic development and promotion activity, the department helps develop a profitable future for Maryland agriculture.

MARYLAND'S BEST

From in-store promotions of Maryland-grown apples and watermelons, to advertising, to media events, and press releases, the department's marketing projects continued to build demand and connect farmers with markets for their products during Fiscal Year 2018. A 2015 analysis of the department's Marketing program, Maryland's Best, showed the effort increasing farm sales by \$7.6 million over five years. For every \$1 spent in advertising and promotions by Maryland's Best, \$15 is returned to the Maryland farmer and state economy. Primarily funded by the U.S. Department of Agriculture Specialty Crop Block Grant Program, the Maryland's Best program encourages consumers to buy Maryland-grown fruits, vegetables, flowers, nursery products, wine, and Christmas trees. Due to restrictions on federal funds, state funds were used to promote dairy, meat, poultry, and the agritourism sectors.

Advertising and media placements targeted food buyers and promoted Maryland consumers' preference for buying local and the local supply of Maryland produce. More than three million consumers received promotional messages from the department during the year through radio, print, and online advertising. Press releases promoting Maryland agriculture products were distributed to more than 400 media outlets. For consumers, the Maryland's Best website is the primary source of information about local farm stands, farmers' markets, and Maryland farms. The website includes farm contact information, websites, directions, and video interviews with

about 1,000 farmers, wineries, and small food processors.

Governor Larry Hogan supported the department's Buy Local program and Maryland's Best by kicking off the 2018 Buy Local Challenge Week with the Buy Local Cookout at Government House in July. The Governor encouraged Marylanders to seek out Maryland-grown food during the event, which included farmers, food writers, chefs, grocery store representatives, and the media.

The department's marketing staff conducted meetings with produce buyers, fresh-cut flower buyers, and marketing professionals from many of the major grocery store chains to increase Maryland-grown produce sales and develop in-store promotional materials using the Maryland's Best logo. Staff took buyers from major grocery store chains on tours of Maryland farms, developing business relationships between farmers and retailers.

The department held its annual Maryland's Best Food & Beverage Expo – formerly known as the Buyer-Grower Expo – in January 2018. This premiere, local trade show connected over 70 farmers and small food processors directly with 300 buyers. Also in FY 2018, the Maryland's Best Ice Cream Trail promoted the dairy sector in the state and encouraged buyers to visit nine dairy farms selling ice cream directly to consumers. Over 100 participants completed the ice cream trail in FY 2018 and submitted their passports for a chance to be named the 2018 Maryland's Best Ice Cream Trailblazer.

MARYLAND'S BEST SEAFOOD

Adding to the department's marketing portfolio, House Bill 120 - Seafood and Aquaculture Product Marketing was passed by the General Assembly and became effective on July 1, 2017. This was a departmental bill that returned the marketing responsibility for Maryland seafood products back to the

Maryland Department of Agriculture (MDA) from the Maryland Department of Natural Resources (DNR) – where it had been for the past six years. MDA marketing staff has worked closely with DNR through this transition, and met several times with the Seafood Marketing Advisory Committee throughout FY 2018 to identify priorities and concerns for the program.

MDA has positioned the seafood marketing program under its successful “Maryland’s Best” branding. This includes new logos and collateral material for the program, as well as access to a well-established network of buyers from grocery chains, restaurants, school systems, and other public and private venues. The move to MDA also allows the seafood industry to participate in trade shows and missions with the Southern United States Trade Association (SUSTA).

True Blue Program. Part of the state’s seafood marketing efforts is the True Blue program. This program aims to promote the state’s iconic blue crab industry by certifying restaurants and establishments that source at least 75 percent of its crabmeat from Maryland. The department commissioned a re-design of the program’s logo and developed a variety of point-of-sale materials including window clings, aprons, and hats. The department also certified the program’s name and logo as a Service Mark (SM) with the Maryland Secretary of State.

Blue Catfish. The program was also heavily involved in developing a market for blue catfish. This non-native species proliferated throughout the Chesapeake Bay and has had a negative impact on its ecosystem, outcompeting native species and feeding on blue crabs and rockfish. One way to lessen its impact is to create a market for the fish, which would help control its population.

Maryland’s Best Seafood has hosted and promoted several tasting events to introduce this fish to Maryland consumers, including a weekly presence at WTMD’s First Thursday concert series in Baltimore, and the NOAA Annual Fish Fry. The program partnered with local chefs to provide different takes on locally caught Chesapeake Bay blue catfish – including blackened filets, ceviche, sliders, and tacos. The program plans to continue these events, and is working with other state agencies to create a procurement program for state institutions.

H-2B Visa Shortage. In the closing months of FY 2018, the program worked with watermen and industry representatives to address a labor shortage caused by a lack of H-2B guest worker visas. Many crab houses on the Eastern Shore rely on these workers to pick crabs, but were unable to secure any visas in the new federal lottery system.

On April 23, 2018, Governor Larry Hogan sent a letter to the U.S. Department of Homeland Security and Department of Labor urging them to restore the availability of H-2B visas for Maryland seafood processors. The federal government released an additional 15,000 visas in the following months, however, many crab processor were still unable to secure visas for their workers.

On June 20, 2018, the Board of Public Works approved \$375,000 in additional funding for seafood marketing. This money came from the state’s contingent fund and was designated specifically for use to promote the state’s blue crab industry amidst the labor shortage. The department will launch an extensive public outreach and advertising campaign in FY 2019.

MARYLAND FARM TO SCHOOL PROGRAM

Governor Larry Hogan designated September 25-29, 2017, as Maryland Homegrown School Lunch Week, a time when Maryland schools promote and serve local foods in the cafeteria. Students in public schools across the state experienced fresh, Maryland-grown and produced food.

This year marks the tenth anniversary of Maryland Homegrown School Lunch Week. At the statewide kickoff event in September 2017, Principal Dr. Dana McCauley, along with students and teachers at Crellin Elementary School, hosted Maryland Agriculture Secretary Joe Bartenfelder, Garrett County Public Schools Superintendent Barbara Baker, and USDA Food Nutrition Services Mid-Atlantic Regional Office Special Nutrition Programs Director Roberta Hodsdon. The students led guests on a tour of the school’s “Sunshine Farm,” where they experienced hands-on work with crops and livestock. Students also had the opportunity to explore the Maryland Agricultural Education Foundation’s “Maryland Ag Products” mobile science lab.

After the tour and brief presentations from federal, state, and local officials, the invited guests joined students in the school cafeteria to enjoy a lunch that featured local products. The menu included hamburgers from a cow raised by a fourth grader at Crellin Elementary that was purchased at the Garrett County Fair and donated to the school by Railey Mountain Vacation Rentals. The Butcher Block in Oakland processed the meat, which was also supplied to other Garrett County schools. Cherry tomatoes from Garrett Growers were also served.

Other local school districts planned various activities to celebrate the 2017 Homegrown School Lunch Week. In Caroline County, Lockerman Middle School students enjoyed the local blue catfish donated by Congressional Seafood,

oysters donated by Madhouse Oysters, and pork sourced from the school's agricultural class and had it butchered. The culinary arts students prepared pork recipes for the taste testing. In Southern Maryland, Calvert, Charles, and St. Mary's counties purchased hamburgers, hot dogs, spicy hot dogs, and cheeseburgers from Hoffman Meats in Hagerstown.

The Homegrown School Lunch Week, an element of the Jane Lawton Farm to School Program, was signed into law in 2008. Maryland spends \$18 million dollars annually on local products in school meals. Maryland ranks ninth in the nation with the average school district spending 23 percent of their food budget on local products, according to the latest U.S. Department of Agriculture (USDA) Farm to School Census.

The Healthy, Hunger-Free Kids Act of 2010 formally established a Farm to School Program within the USDA to improve access to local foods in schools. In 2013, the USDA conducted the first nationwide Farm to School Census, in order to establish realistic goals with regard to increasing the availability of local foods in schools. In 2015, the USDA conducted a second Farm to School Census to measure progress towards reaching this goal.

School Collateral Materials. The Farm to School Program distributed more than 3,900 posters, 6,350 window clings, and 127,000 stickers among the 24 school systems. The program also distributed 301 "This Farm Feeds Schools" signs to producers who provided products to schools during Maryland Homegrown School Lunch Week. The department created over 20 Farmer-Specialty Crop Trading Cards and distributed over 200,000 of these cards across the state. The card featured a specialty crop product on one side and the farmer on the other side. The producer on the card sold Maryland-grown product to the particular school system.

PROJECT GREEN CLASSROOMS

The department is on the Leadership Team and Steering Committee for Governor Larry Hogan's Project Green Classrooms. The initiative serves as an advisory body, working collectively across multiple disciplines, the public sector, and the private sector, to identify gaps and barriers and make recommendations to decision-makers regarding solutions that will bring about change in the areas of environmental literacy, nearby nature, and career pathways for youth.

SPECIALITY CROP GRANTS

The department's Marketing program administers the U.S. Department of Agriculture's (USDA) Specialty Crop Grants. During FY 2018, the Maryland Department of Agriculture (MDA) awarded over \$407,843 to seven projects that enhanced the competitiveness of specialty crops in Maryland. Some projects are designed to:

- Continue to mitigate specialty crop food safety risks by reducing barriers to implementing Good Agricultural Practices (GAP) programs through specialty crop producer technical assistance, training programs, one-on-one assistance on developing GAP programs, and USDA GAP and USDA Harmonized GAP audit certification cost-share assistance.
- Continue to strengthen consumer awareness of local specialty crops and connect specialty crop farmers with markets through seasonal promotions of Maryland specialty crops via mass media, the Maryland's Best website, direct partnerships with Maryland specialty crop associations such as the Mar-Del Watermelon Association and Maryland Apple Promotion Board, and other strategic promotional avenues.
- Develop a social media platform and marketing toolbox for small direct fruit marketers that will increase consumer awareness of locally and regionally produced small fruits and their nutrient and dietary value through promotional/display materials for the retail and farm market segments throughout the season.
- Provide an advanced small fruits and hops workshop series, a beginning small fruits and hops workshop series, two regional tours, research and demonstration trials of 17 varieties of small fruits and hops, and a resource portal library. The trials, totaling 348 plantings, will be tested for Southern Maryland climate, disease pressure, and unique growing conditions.
- Conduct field experiments to develop and test new tools for managing weeds and insect pests in organic lima (*Phaseolus lunatus*), snap bean (*P. vulgaris*), and other *Phaseolus* bean production systems. This will involve combining a living mulch with conservation tillage and disseminating research findings to all Maryland farmers.
- Perform pre-award and post-award activities to administer Specialty Crop Block Grant Program funding and ensure that the state agency and sub-awardees abide by federal and state requirements and regulations.

GOVERNOR'S ADVISORY COMMISSION FOR MARYLAND WINE AND GRAPE GROWING

The Governor's Advisory Commission on Maryland Wine and Grape Growing (§10-1201 Agricultural Article) was authorized in 2005. The Commission advises the Maryland Wine and Grape Promotion Council (§ 2-1103 Agriculture Article) on the allocation of funds from the Maryland Wine and Grape Promotion Fund. The passage of House Bill 130 – Maryland Wine and Grape Promotion Fund – Chapter 104 in 2017 created a more efficient review and approval process for applications submitted to the Maryland Wine and Grape Promotion Fund. The changes included: eliminating a requirement that the Board of Public Works approve expenditures from the Fund on recommendation from the Council and requires the Governor's Advisory Commission on Maryland Wine and Grape Growing to recommend the allocation of funds from the Maryland Wine and Grape Promotion Fund to the Secretary of Agriculture for approval.

MARYLAND WINE AND GRAPE PROMOTION FUND

The Maryland Wine and Grape Promotion Fund, authorized in 2005, provides grants to non-governmental organizations to encourage the production and consumption of Maryland wine and promote the production of wine grapes in the state. The department administers grants from the Maryland Wine and Grape Promotion Fund.

The Fund was created with two types of funding mechanisms. The first is direct allocations in the supplemental budget and the second is a self-funding mechanism. In 2015, the passage of House Bill 827 Chapter 282 created the Fund's self-funding mechanism. The statute altered the distribution of alcoholic beverages tax revenue so that the revenue generated from the tax on wine produced at Class 4 wineries licensed in the state must be distributed to the Maryland Wine and Grape Promotion Fund (§ 5-105(E) Tax – General Article).

In Fiscal Year 2017 to 2018, grants were distributed from the Fund to support the following activities: the Maryland Wine and Grape Speaker Series; the Maryland Wine Economic Impact Study; rebranding and promotion of the Maryland Wine Industry; the Vineyard Capital Assistance Program; GIS based vineyard site evaluation; large scale vineyard expansion; development of wine cultivars throughout Maryland; and enology workforce development. In all, \$180,261 in funds have been distributed.

FARMERS' MARKET PROGRAMS

The goal of the Farmers' Market Programs within the department's Marketing Program is to help farmers and farmers' market managers connect to the general public and consumers who want to purchase Maryland products. Through this economic development and promotion activity, the department helps develop a sustainable future for Maryland's diversified agricultural products.

FARMERS' MARKET NUTRITION PROGRAM (FMNP)

The Farmers' Market Nutrition Program (FMNP) is a U.S. Department of Agriculture (USDA) funded nutrition grant program that is administered by the Maryland Department of Agriculture in conjunction with the Maryland Department of Health and the Maryland Department of Aging. The USDA gives grants to state agencies to provide checks to low-income participants. The two federal programs funded are the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the Senior Farmers' Market Nutrition Program (SFMNP). Checks can be used to buy fresh fruits, vegetables, and cut herbs (and honey for seniors only) at Maryland farmers' markets.

The FMNP runs every year from June 1 through November 30. In Maryland, about 400 farmers participate annually. The program helps expand access for low-income Marylanders to be able to purchase fresh, local produce at their local farmers' markets. In addition to their economic importance, farmers' markets are popular community meeting places where residents catch up with each other and purchase nutritious, locally produced fruits, vegetables, baked goods, and other food products. In Maryland, all of the 120 recognized markets have authorized farmers present who participate in the FMNP. In 2018, WIC recipients and seniors spent \$488,760 of the federal and state funded benefits with produce farmers.

FARMERS' MARKET DIRECTORY

Over 60,000 printed Maryland Farmers' Market Directories are distributed to the general public every year through tourism offices, libraries, farmers' markets, senior clinics, welcome centers, and other facilities. This directory includes all the farmers' markets recognized by the department in all 23 counties and Baltimore City. The online version is also available on the department's website and the Maryland's Best website.

INTERNATIONAL MARKETING

The department's International Marketing program represents Maryland's farmers, breeders, processed food companies, and nurseries in the Southern United States Trade Association (SUSTA). The department is a member of the trade association through its membership in the Southern Association of State Departments of Agriculture (SASDA). The trade association's activities for Maryland in FY 2018 included food trade shows in the United Arab Emirates and South Korea as well as a trade mission to China.

Irish Horse Mission (USLGE). In June, 2018, the Maryland Department of Agriculture (MDA) led a mission to Ireland to connect Maryland Thoroughbred and Standardbred breeders with potential markets for Maryland horses. The department's Maryland Horse Industry Board, International Marketing staff, and industry representatives identified members of the Irish industry to meet with, events to attend, and places to tour.

The group met with leadership from: Irish Thoroughbred Marketing, Irish National Stud, Erefyld Horse Stud, Curragh Race Course, Gaff's Sales, Fairyland Racetrack, Red John Memorial Racing, Kildagan Stud, Giltown Stud, and Coolmore Stud.

Ireland's horse industry contributes about 816 million Euro to the Irish economy annually. This trip will be discussed in greater detail in the Maryland Horse Industry Board section of this report.

Southern United States Trade Association (SUSTA)

Activities. The department connected 13 Maryland companies with new international markets through SUSTA activities, including trade shows and missions. Sales from those activities represented more than \$49 million coming back into Maryland. The department connected Maryland companies to 755 potential buyers.

ACRES AND CROP INSURANCE PROMOTION

The department administers two federally funded programs, the Crop Insurance Promotion and the Maryland Agricultural Conflict Resolution Service (ACRES). The Crop Insurance Promotion is funded with \$285,000 from the U.S. Department of Agriculture's (USDA) Risk Management Agency. Through

press releases, newsletters, presentations, and advertisements in agricultural media, the department increased participation of Maryland farmers in federal crop insurance programs to 6,464 farmers in FY 2018 – up from 3,700 in FY 2002. Farmer investment in crop insurance helps stabilize the Maryland agriculture economy as weather and market volatility make farming a challenging sector. In FY 2018, more than \$295 million of agricultural production was insured on more than 853,000 acres. The ACRES program, funded by USDA, helps keep farmers out of court by providing voluntary mediation services. As more urbanites move to rural areas, conflicts are expected to grow. The number of requests for mediation grew from eight requests in 2005 to an average of 24 per year. Eighty percent of mediations conducted result in a solution that both parties agree with. Additionally, farmers and others who do not use mediation and have agricultural-related disputes are provided assistance in developing solutions that effectively eliminate or manage conflict. The Maryland Right to Farm statutes help ensure that farmers have the opportunity to respond to complaints from neighbors and others. Many counties have ordinances that support the Right to Farm statute. These ordinances contain clauses that provide for real estate notices and disclosures to alert people moving next to farms of the potential impacts that the farm may have such as noise, odors, dust, etc.

SPAY AND NEUTER GRANTS PROGRAM

Created in 2014 by the Maryland General Assembly, the Spay and Neuter Grants Program was established to assist in the reduction of animal shelter overpopulation and cat and dog euthanasia rates. The program carries out its mission by financing competitive grants to local governments and qualifying animal welfare organizations for programs that will effectively facilitate and promote spay and neuter services for cats and dogs. Funding for this program comes solely from fees paid for by the pet food industry. As mandated by the Maryland General Assembly, a fee is levied on all pet food companies that sell their product(s) in the state. In the first year, companies paid \$50 per product. In 2014, the fee increased to \$75 per product and in 2015, the fee capped at \$100 per product. As of June 30, 2018, the program has funded 87 projects, which have provided 40,428 spay and neuter procedures across the state.

ANIMAL HEALTH & DIAGNOSTIC LABS

ANIMAL HEALTH PROGRAM

The Maryland Department of Agriculture's (MDA) Animal Health Program prevents and controls infectious and contagious diseases in Maryland livestock and poultry with particular emphasis on those diseases that threaten the public health, endanger food supplies, or threaten the economic security of the animal industries. Staff members work closely with partners in the animal industries, local, state, and federal governments, and the public to ensure an efficient team effort for disease prevention, detection, and control. The Animal Health Program consists of three subprograms, including: the Animal Health Headquarters and Administration with eight full-time staff; the Field Operations with five full-time and one part-time staff member; and the Diagnostic Laboratory System with 15 full-time and one part-time staff.

In addition to routine or scheduled work, the Animal Health Program also responds to all animal emergencies under the State Emergency Operations Plan, Emergency Support Functions 6 and 16. Animal emergencies are categorized as: 1) animal health emergencies, such as a disease outbreak in livestock or poultry; and 2) animals in emergencies, such as assisting with feed provisions or managing pet sheltering operations in a natural disaster. The program works closely with the Maryland Emergency Management Agency (MEMA) and the majority of Animal Health personnel are emergency essential employees due to the critical nature of animal emergency response.

The department has a small, but important regulatory role in protecting and promoting animal welfare that is limited to livestock at auction markets and certain aspects of animal transport and exhibition. MDA frequently assists local animal control agencies and other agencies to protect animal welfare through field consultation, training, investigative support, and diagnostic evaluations of affected animals.

PROGRAM OPERATIONS

Regulatory and outreach activities are designed to help support compliance with animal health regulations and other efforts to promote animal health, public health, and agricultural productivity.

Interstate Movement. All livestock and poultry moving into or out of Maryland must be examined for signs of contagious or infectious disease, must have the required vaccines and disease testing, and must be accompanied by a Certificate

of Veterinary Inspection. In Fiscal Year 2018, Animal Health Program staff processed certificates of movement for 68,034 livestock animals, including horses and 2.2 billion poultry.

Animal Exhibitions and Back Yard Flocks. Animal Health Program staff performed 63 inspections of exhibitions (fairs and shows) and processed 10,895 interstate health certificates in FY 2018 for exhibitions, races, and sales in state. With the help of federal partners, exhibition officials, and trained volunteers, the department's field inspection staff inspected and tested livestock and poultry upon entry to events and during the course of the exhibition. Animals with signs of infectious or contagious disease were isolated and excluded from the exhibition. Outreach and education efforts, particularly for zoonotic diseases affecting humans and animals, continued throughout the year.

During FY 2018, Animal Health Program staff also continued outreach, inspection, and training in the Back Yard Flock sector. This sector continues to increase in size and has the potential to cause a disease risk.

Due to the popularity of back yard flocks, the Animal Health Program began identifying, inspecting, and regulating small flocks selling poultry and hatching eggs to improve sanitation and disease traceability. In addition, the program worked to bring flocks into compliance with existing state regulations and interstate movement requirements.

The Animal Health Program certifies individuals in poultry sampling techniques for Salmonella Pullorum and avian influenza as part of the Poultry Testing Agent Program. This program allows our poultry testing agents to provide low-cost services to owners and producers who wish to exhibit or sell birds in Maryland or other states. In FY 2018, the Animal Health Program held three trainings and 39 in-field certifications for a total of 83 Maryland Authorized Poultry Testing Agents.

Livestock and Poultry Auctions and Dealers. During FY 2018, Animal Health Program staff inspected 219 livestock auctions held at the four U.S. Department of Agriculture (USDA)/Maryland Department of Agriculture "Approved Livestock Tagging Stations" in Maryland. During the inspections, animals are observed for signs of infectious or contagious disease, including foreign animal diseases and for compliance with welfare, identification, and other market regulations. Disease surveillance is conducted for diseases of concern such as avian or swine influenza. In FY

2018, there was one incident of Avian Influenza Type A that was detected in one of the poultry at an auction market. This incident was quickly controlled and eradicated. In FY 2018, 121 dealer inspections were done for the 65 livestock dealers. An additional, 56 farm stores that sell in the spring chicks and ducklings were also inspected. The premises were inspected for diseased animals, record-keeping compliance, and education regarding Animal Disease Traceability.

Biologics. In FY 2018, the Animal Health Program evaluated 51 commercial animal biological products, mostly vaccines, and issued authorization letters to pharmaceutical companies, distributors, veterinarians, or researchers allowing them to import, manufacture, market, distribute, or use the biological agents in Maryland.

Contagious Equine Metritis (CEM) Import Quarantine Station. The department operates one U.S. Department of Agriculture CEM quarantine station in partnership with a private business. At the quarantine station, imported horses receive extensive testing to ensure they are free of CEM prior to being released for breeding activity in the United States. CEM is a disease that is common around the world, but has been eradicated in the U.S. In FY 2018, the department issued 166 import permits through the CEM program.

Animal Disease Traceability (ADT) Program. Maryland lost one market mid-year due to a business closure. The remaining four markets throughout the state continued to function as approved "Livestock Tagging Stations." They are under a combined U.S. Department of Agriculture (USDA) and Maryland Department of Agriculture (MDA) authority. This allows them to provide tagging and recordkeeping services to livestock producers at the market, facilitating interstate movement and official identification of Maryland animals. In Maryland, official identification is a USDA authorized ear tag. Ear tag distributors, livestock dealers, and the livestock auction markets are required to maintain records of tag issuance. In FY 2018, to increase compliance with ADT requirements, there was outreach to producers, markets, veterinarians, and University of Maryland Extension officials. The Animal Health Program upgraded its ADT policy by requiring the use of radio-frequency identification tags (RFID) in animals entering exhibitions. This upgrade will enable better and more efficient tracking of animals moving in, out, and throughout Maryland. To implement this requirement, the Animal Health Program set up an ADT Advisory Board that developed outreach and educational information informing producers, exhibition sponsors, extension officials, and veterinarians throughout the state about the new identification upgrade. The eventual goal of ADT is to use automated recordkeeping for all livestock

movements – similar to that used for tracking packages – to trace the movements of animals implicated in a disease outbreak within 24 to 48 hours. In FY 2018, USDA traceback tests for cattle, swine, and poultry indicated that Maryland could meet the 24 to 48 hour proposed federal standard for tracing individual animals back to the farm of origin. MDA uses the Federal Surveillance Collaboration Services' Core One system database to maintain identification data. This enables tracing of animals rapidly when necessary in a disease outbreak investigation. The Core One system is compatible with systems in use by other states and will better enable rapid sharing of data between states during a disease event.

While identifying animals of concern is a priority, an equally important priority is identifying those animals, farms, and facilities which are not involved in a disease investigation so they can maintain normal commerce with little or no delay – minimizing economic losses and business disruptions.

Livestock and poultry producers must register their Premises. Premises registration is needed to improve the ability to trace animals. To date, property owners and operators with livestock have registered 727 premises in Maryland. Livestock premise registration is required for animals to move interstate. Under Maryland law, most poultry premises must be registered with MDA. In the event of disease outbreaks, the database allows staff to quickly identify nearby premises, test birds, and provide appropriate information to producers. To date, 6,332 poultry premises are registered under the state program.

EMERGENCY RESPONSE READINESS

The Animal Health Program continually prepares and trains for an emergency response. During FY 2018, Animal Health Program staff continued to work closely with the poultry industry and state and federal agencies to prevent and prepare for a Highly Pathogenic Avian Influenza (HPAI) outbreak. Program staff led or participated in six emergency response exercises or trainings in FY 2018, primarily focused on HPAI response. Through continued training, department personnel are assigned and trained to respond to agricultural emergencies, through utilizing the Incident Command System and the Web EOC system. In addition, Animal Health Program personnel collaborated with the Maryland Department of Health, the Maryland Emergency Management Agency (MEMA), the State Board of Veterinary Medical Examiners, and the Maryland veterinary community to assemble the State Voluntary Veterinary Corps – a group of about 230 veterinarians and technicians willing to support emergency operations when activated.

FY 2018 marks the seventh and last year of partial federal funding for the department's participation in the Mid Atlantic Secure Milk Supply (SMS) initiative, a multistate continuity of business planning effort for the dairy industry in the event of a foot and mouth disease (FMD) outbreak.

The voluntary initiatives provide significant contributions by the industry and participating states in practicing "whole farm" biosecurity. This coalition includes twelve eastern states, with the following states as full members: Delaware, Georgia, North Carolina, New Jersey, New York, Maryland, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia. The greater the cooperation among states to promote biosecurity procedures on dairy farms, enhances the ability of the dairy industry to ship milk across state borders with minimal delay or disruption during an FMD outbreak, which results in less market disruptions and less financial hardship to producers, processors, and haulers. In FY 2018, Maryland certified its first processing plant, as "qualified" under the Secure Milk Supply Program. The Laurel Balancing Plant will be able to continue to move milk in the event of an FMD outbreak.

DISEASE SURVEILLANCE AND RESPONSE

The Animal Health Program oversees or conducts ongoing routine, active, or enhanced surveillance for several livestock and poultry diseases, including foreign animal diseases. The program has one federal-state Cooperative Agreement for disease control programs for multiple livestock and poultry species, which fund much of the enhanced surveillance. Enhanced surveillance is an increased frequency or number of tests for a disease of particular significance or risk. Specific enhanced surveillance programs and/or investigations are highlighted below.

Avian Influenza. The program conducts enhanced surveillance for avian influenza and other high consequence diseases of poultry in commercial and non-commercial flocks with federal funding, and maintains readiness to respond to avian influenza outbreaks in the state or Delmarva region. In FY 2018, with the continual threat of a highly pathogenic strain of avian influenza entering the United States, the Maryland Department of Agriculture (MDA) continued: enhanced surveillance at auction markets; continued requirements for avian influenza testing of resident poultry entering exhibitions within 21 days of entry; and continued required testing of out-of-state poultry within 21 days of entry. MDA performed 7,554 avian influenza tests in FY 2018. The live virus was not detected in this testing.

Foreign Animal Disease. No foreign animal disease (FAD) was detected in Maryland during FY 2018. Only one foreign animal disease investigation was conducted this fiscal year. The department has three qualified Foreign Animal Disease Diagnosticians (FADD) on staff, and three department veterinarians attended one FADD Continuing Education Training this year.

Tuberculosis and Brucellosis. Maryland remains free of bovine tuberculosis and bovine swine brucellosis. In FY 2018, Animal Health Program staff participated in a U.S. Department of Agriculture refresher training for tuberculosis and brucellosis diseases regulatory actions. In FY 2018, five bovine tuberculosis responders were reported by Maryland-accredited veterinarians. They were re-tested by the comparative cervical test method and determined to be negative for tuberculosis.

Equine Herpes Virus. The neurologic strain of Equine Herpes Virus (EHV) is a contagious and potentially fatal disease of horses that can result in quarantines and disruption of the horse industry overall. Therefore, the program has developed the ability to rapidly test for EHV of high concern to prevent spread of the disease. In FY 2018, 57 horses were tested for EHV-1 at the department's animal health labs. None tested positive for the fatal neuropathogenic strain of EHV.

Quarantines. As a result of disease surveillance and response efforts in FY 2018, 30 quarantines (hold orders) were placed and after being cleared, 30 quarantines were released on these 30 farms. Additionally, there were 305 30-day quarantines for swine entering the state that were placed through the Swine Permit process. There was also another 166 quarantine actions associated with horses moving through the CEM Quarantine Import Stations in Maryland.

Note: Selected parameters of Animal Health activities are reflected on the chart (next page) titled "Animal Health Program FY 2018 – Selected Parameters."

LABORATORY SYSTEM MISSIONS AND STAFF

The Animal Health Laboratory System supports the animal and public health regulatory and emergency response missions of the Maryland Department of Agriculture (MDA), other state agencies, and local and federal governments. It assists veterinarians and livestock and poultry producers in maintaining healthy herds and flocks. The regulatory activities of other state, federal, and local governmental entities involved in animal health depend on the surveillance and compliance testing carried out in these laboratories.

ANIMAL HEALTH PROGRAM FY 2018 – SELECTED PARAMETERS

Parameter	Total Number
Animals Certified to Move In, Out or Within Maryland	68,034
Avian/Poultry Export	86,666
Avian/Poultry Import	2,135,099,449
Biological Authorizations	51
CEM Permits (Quarantines)	166
Dealer Inspections	121
Equine Health Certificate – Export	9,664
Equine Health Certificate – Import	5,267
Exhibition Inspections	63
Export Certificates (Non Equine)	13,330
Foreign Animal Disease Investigations	1
Import Certificates (Non Equine)	28,459
Inspections and Investigations – Total Combined	334
Intrastate Certificates Total (Show)	10,895
Livestock Dealer Licenses	29
Market Inspections	219
Quarantines Issued for Disease Investigations	30
Swine Permits Issued (Quarantines)	305

Examples include the diagnosis of certain high consequence pathogens to support:

- National disease control programs of the U.S. Department of Agriculture (USDA), e.g. avian influenza in poultry, tuberculosis in cattle, and brucellosis in swine;
- The U.S. Food and Drug Administration’s (FDA) Center for Veterinary Medicine initiative to promote animal and human health by investigating potential biologic contaminants in animal feeds, animal products, or produce;
- The Department of Health in diagnosing animal rabies and other animal diseases of public health significance; AND
- The Department of Natural Resources disease surveillance programs of wildlife diseases of concern such as chronic wasting disease in deer and brucellosis in marine mammals.

Additionally, the system provides post mortem and related diagnostic support to animal control agencies for certain matters involving cruelty and neglect.

To accomplish these missions, the system performs a wide array of diagnostic procedures on a variety of specimens and samples submitted by producers, agricultural businesses, animal owners, veterinarians, and government agencies. To ensure full continuity of services on daily basis as well as providing surge capacity in the event of a disease outbreak, the laboratory scientists in the system are cross-trained so that a minimum of three are able to perform each critical diagnostic test.

Both of the department’s Animal Health Diagnostic Laboratories are accredited by the American Association of Laboratory Accreditation (A2LA) – a rigorous process that promotes and ensures quality and reliability of test results by requiring strict maintenance to standard operating procedures, internal audits, and best practices. Both labs are

members of the National Animal Health Laboratory Network (NAHLN), a network led by the National Veterinary Services Laboratory (NVSL) in Ames, Iowa. NAHLN Laboratories must maintain strict adherence to best practices and standard procedures, and scientists must pass proficiency testing set forth by the NVSL. The Salisbury Laboratory is a National Poultry Improvement Plan (NPIP) Laboratory, therefore meeting requirements of this national program for specific poultry disease testing. In addition, both laboratories serve as Sentinel Laboratories for the state of Maryland, providing zoonotic disease testing services in collaboration with the Maryland Department of Health.

The Laboratory System also provides educational and training opportunities to a diverse group of students, including students of the Virginia-Maryland Regional College of Veterinary Medicine and other U.S. veterinary schools, the University of Maryland, Salisbury University, and other U.S. colleges and universities. Additionally, the Laboratory System provides training to veterinary pathology residents from Johns Hopkins University, the Armed Forces Institute of Pathology, and poultry industry veterinarians.

Both labs are staffed with a veterinary pathologist, four laboratory scientists, one laboratory technician, and two administrative team members to perform or assist with diagnostic activities in necropsy, molecular biology, bacteriology, serology, parasitology, virology, and mycology as well as important duties of supervision, quality assurance, safety assurance, and operational support. The veterinary pathologist conducts post mortem examination of animals and interprets results generated by the science staff. This person also serves as the laboratory director with responsibility for all activities of the laboratory. A quality and safety manager assists both laboratories in maintaining the quality assurance programs to meet accreditation standards. In addition, an IT specialist manages and troubleshoots the laboratory information management system, essential for rapid and efficient data input and reporting.

Within the broad system missions, each laboratory has specific geographic and technical missions. The primary mission of the Frederick Laboratory focuses on food animal livestock and horses. Secondary missions include diagnostics for high-consequence

diseases of poultry, to include regional service and back-up for the poultry laboratory at Salisbury during an emergency. The Frederick Laboratory primarily serves constituents on the Western Shore of the state. The laboratory testing capability includes rabies, brucellosis, contagious equine metritis, equine herpes virus, equine infectious anemia, Lyme disease, John’s disease, avian influenza, and exotic Newcastle disease. Equine herpes virus testing capability was developed to be able to rapidly detect and control the spread of this disease, which is of significant concern to the horse racing industry. Avian influenza testing of poultry was added to the Frederick Lab’s mission in FY 2011 to provide the agency with additional equipment and trained staff to support that activity in the event of a poultry health emergency requiring a substantial surge in testing capability.

The primary mission of the Salisbury Laboratory focuses on infectious diseases of poultry within Maryland. The Salisbury Laboratory primarily serves the large commercial poultry industry of Delmarva and the Eastern Shore region of Maryland, but also provides expertise for the growing organic, free-range, and backyard poultry sector. Secondary missions include full service post mortem diagnostic support for certain disease in other domestic animals of public health significance, support of disease and welfare investigations involving mammals, equine infectious anemia testing for horses, and swine influenza testing. The facility has a large

ANIMAL HEALTH PROGRAM LABORATORY STATISTICS: 2018

Diagnostic Activity	Number	FY18 Data
Total Accessions	14,044	13,697
Total Tests	56,167	42,269
Mammalian Necropsy	178	183
Poultry Necropsies (flocks)	598	515
Avian Influenza	8,211	7,554
Brucellosis	1,167	926
Contagious Equine Metritis	2,543	2015
Equine Herpes Virus (EHV-1)	73	57
Equine Infectious Anemia	11,109	9,302
John’s Disease in Cattle	1,803	2,133
Rabies	64	91
Salmonella Pullorum	3,199	1,990

A summary of testing carried out in FY 2018 at the department’s Animal Health Diagnostic Laboratories for regulatory or otherwise select significant diseases.

molecular diagnostic capability to assist the high volume of testing needed for the poultry industry, primarily used for the detection of avian influenza, Newcastle disease, infectious bronchitis virus, infectious laryngotracheitis, Salmonella, and mycoplasmal diseases. The facility had a close working relationship with the University of Delaware Poultry Diagnostic Laboratory. Together, they operate a poultry health diagnostic network that seamlessly serves poultry producers of the Delmarva Peninsula.

OTHER ANIMAL HEALTH PROGRAM ACTIVITIES

Other department Animal Health Program activities include: the licensing of livestock markets and dealers, accreditation of federal-state veterinarians, and active participation in the National Poultry Improvement Plan – which provides standard monitoring and certification programs for commercial poultry for significant diseases, including avian influenza and Salmonella, and for hatchery sanitation.

STATE BOARD OF VETERINARY MEDICAL EXAMINERS

The State Board of Veterinary Medical Examiners mission is to protect animal health and welfare and the public by enforcing the Veterinary Practice Act and related Code of Maryland regulations. To that end, the Board licenses and/or registers veterinarians, veterinary technicians, veterinary hospitals, and animal control facilities. The Board's activities also include inspecting veterinary hospitals and animal control shelters, investigating consumer complaints as well as initiating its own investigations, and determining whether disciplinary action will be taken against any licensees.

The Board is comprised of seven members appointed by the Governor to serve five-year terms. Five members are veterinarians, at least two of which must be primarily large animal practitioners. The remaining two members are consumer advocates. A Veterinary Technician Committee, which falls under the Board's jurisdiction, recommends changes to the laws and regulations governing registered veterinary technicians in the state. The Board is also an active, voting member of the American Association of Veterinary State Boards (AAVSB), a national non-profit organization that provides programs and services to veterinary boards to assist them in carrying out their statutory responsibilities for the public's protection.

The Board reports disciplinary action information to the AAVSB as well as to other state veterinary boards and the general public through its website. The Board was represented at the AAVSB's annual meeting in San Antonio in FY 2018. The Board also reviews requests for approval of continuing education credits for veterinarians and veterinary technicians.

FY 2018 HIGHLIGHTS

Board Activities during FY 2018:

- The Board licensed 188 new veterinarians and renewed the license registrations of 2,871 veterinarians

throughout the state.

- The Board licensed or renewed licenses for 633 veterinary hospitals and completed 409 sanitation inspections. Of those inspections, 92 percent passed inspection.
- The Board renewed the licenses of 159 Registered Veterinary Technicians (RVTs), who have three-year licenses.
- The Board licensed a total of 27 animal control facilities across the state.
- The Board investigated a total of 71 complaints during FY 2018, including those resulting from hospital inspections. A total of 56 investigations were closed during the year.

DATABASE UPGRADE

During FY 2018, the Board began a significant upgrade of its internal database – the first in more than a decade – and began creating an online portal that will allow new applicants to apply for a license online and will allow current licensees to track their continuing education requirements, update their contact and employment information, and renew their licenses online. The first phase of that project began with a new online license renewal system that launched at the end of FY 2018. The complete website and backend database are expected to be fully launched in FY 2019.

ONLINE CE REQUESTS

Requests to the Board to obtain or offer continuing education courses has long-been a paper-based, mail-in process. The Board set up an online portal at the end of FY 2018 so that requests made for FY 2019 could be done online, making the entire process faster and more efficient for both providers, licensees, and Board staff.

RELAUNCHED THE TECH COMMITTEE

The Veterinary Technician Committee was created in statute and has seven members appointed by the Board with the approval of the Maryland Secretary of Agriculture. The committee's job is to:

- Evaluate, examine, and determine the qualifications for applicants;
- Recommend the subject, scope, form, date, time, and location for each examination;
- Establish continuing education requirements for veterinary technicians;
- Define the duties and responsibilities of registered veterinary technicians;
- Recommend reasonable rules and regulations; AND
- Generally assist the Board in registering and regulating veterinary technicians.

The Committee was relaunched in FY 2018 after 18 months of inactivity. A statewide call for applications was made and more than 25 technicians and veterinarians applied for six available positions. The committee met in-person twice during FY 2018 and began researching several areas of interest for possible action by the Board in the future.

REGULATORY HIGHLIGHTS

During the FY 2018 Legislative Session, the General Assembly passed **SB 1223 - Controlled Dangerous Substances Registration – Authorized Providers – Continuing Education**. This bill requires any veterinarian who applies for an initial Controlled Dangerous Substances (CDS) permit or

who applies to renew a CDS permit on or after October 1, 2018 to first take two hours of continuing education in prescribing or dispensing CDS. The CEs must be approved by the State Board. The Board reviewed and approved a list of courses that would meet these requirements and posted them on the Board's website.

During the FY 2017 Legislative Session, the General Assembly passed **HB 626 - Agriculture - Animal Shelters - Standards of Care and Protocol Implementation and Enforcement**, which required the department to develop standards of care for dogs and cats kept in animal control shelters; a shelter that a county or municipality contracts with for animal control services; or a shelter that has received a grant from the Maryland Spay and Neuter Grant Program during the previous year. The regulations articulating those standards of care were developed during FY 2018 and took effect on April 23, 2018. The State Board will begin inspecting these facilities and enforcing these minimum standards during FY 2019.

Two regulations the Board put forward in FY 2018 were included in the Governor's Regulatory Reform Report and published in the April 2018 Maryland Register.

- **COMAR 15.14.10.05E** allows veterinarians to complete nine of their required 18 hours of annual continuing education online. Previously, they were only allowed to complete six hours online.
- **COMAR 15.14.01.12-1G** requires a veterinarian to examine a patient at least once during the preceding 12 months before renewing any prescription medication for a chronic condition. If an examination has not occurred, a prescription may not be renewed.

MARYLAND HORSE INDUSTRY BOARD

The Maryland Horse Industry Board (MHIB) consists of the Secretary of Agriculture or his designee and 11 members from a cross-section of the horse industry appointed by the governor to four-year terms. During FY 2018, the horse board operated with a full slate of board members and conducted 11 monthly board meetings. The board reached a new level of engagement when Fair Hill International, an event staged at one of the principal venues involved in its 2015 Horse Park System Study, won the bid to host one of the seven premiere five-star equestrian events in the world. The board also celebrated its 20th anniversary, including the 50th anniversary of the state's stable licensing system, started in 1968 and

housed until 1998 at the Maryland Department of Labor, Licensing & Regulation. During the year, three-term board member Ron MacNab, who represented Trails & Recreational Riding, resigned due to health reasons. Beverly Raymond moved over from representing Humane Societies to take his place. The governor then appointed Erin Ochoa, Executive Director of Days End Farm Horse Rescue, to fill the Humane Societies position.

Maryland law defines six statutory duties of the horse board. These duties are to:

- Promote the use and development of horses in Maryland;
- Support research related to equine health and related issues;
- Create public awareness of the value of equine activities as they relate to green space preservation;
- Develop and disseminate information concerning the equine industry;
- Advise the department regarding matters affecting the state’s horse industry; AND
- License and inspect commercial stables that solicit business from the public, either by giving lessons, boarding horses, renting them for activities such as trail and carriage rides, or offering them a rescue or sanctuary.

As the commodity board for the state’s horse industry, the horse board develops projects to help spur the economic development of the entire equine industry and particularly to initiate marketing efforts to help grow the recreational riding sector.

Key accomplishments of the horse board in FY 2018 are listed below.

Licensing. The Maryland Horse Industry Board licensed 765 stables in FY 2018. The number of licensed stables remained about the same as Fiscal Year 2017 with a slight decrease of eight stables. The decrease was due to several small “mom and pop” stables closing, one operator moving two stables out of state and four stables not renewing because of financial reasons despite aggressive measures to charge them with penalties. Still, the figure represents the third highest number of stables licensed by the board. A total of 33,019 tons of feed were sold, resulting in a \$199,221 contribution to the board’s Feed Fund.

Moving Forward to Make Major Improvements at Equine Competition Venues in the Maryland Horse Park System.

Fair Hill won the bid during Fiscal Year 2018 to host a new international five star three-day event competition. A study conducted by the Maryland Stadium Authority was published in September 2015 and identified two venues in need of major upgrades to comprise a world-class system: the Fair Hill Natural Resources Management Area in Elkton as the major field event venue and the Prince George’s Equestrian Center as the major show/expo complex. A third site was recommended to serve as the cultural and education center, this site was not identified at that time.

- **Fair Hill.** The horse board established a Fair Hill Task Force, chaired by board member Jay Griswold, to bring together the major equestrian entities at Fair Hill and to formulate short-term and long-range goals. Then, in conjunction with the Maryland Sports Commission/ Maryland Stadium Authority, the two groups helped Fair Hill International respond to a proposal to bring a five-star, three-day event competition, one of only seven in the world, to Fair Hill.

Four other equestrian venues submitted bids, two in Virginia and one each in North Carolina and Florida. Four other equestrian venues, two in Virginia and one each in North Carolina and Florida, submitted bids. The horse board also sponsored meetings with equestrian groups, community organizations, 18 government agencies, and stakeholders, to gain support for the prestigious competition to be held at Fair Hill. In 2017, the United States Equestrian Federation (USEF) made two site visits to Fair Hill. Following these visits, the USEF announced that Fair Hill had won the bid for a five-star three-day event competition. Since then strategies and plans for improvements at Fair Hill have escalated.

During FY 2018, Griswold took the helm of the Fair Hill Foundation and Emily Wilson, Acting Assistant Secretary at the Maryland Department of Natural Resources (DNR), became the point person for the Fair Hill project at the agency. Under the leadership of the Maryland Stadium Authority, Maryland Sports Commission, and DNR, the horse board is working with the Fair Hill Foundation, Fair Hill International, Fair Hill Training Center, Fair Hill Races, the National Steeplechase Association, and others to raise \$10 million to match \$10 million already committed to the project by the state of Maryland. By July 1, 2018, \$2 million had been raised by both the state and private donors to start the design, engineering, and for environmental, water and other various studies. Phase I of the \$20 million construction project is scheduled to begin by June 1, 2019 in time to host the first five-star event in October 2020. Extensive improvements to the racetrack, construction of new facilities to hold internationally-rated horse shows as well as the five-star event, and all the current equine amenities – including 70 miles of bridle trails – will make Fair Hill a world class equestrian destination. The site is already home to the National Steeplechase Association and the world-renowned Fair Hill Training Center.

- **Goucher College.** The Maryland Horse Breeders Association moved into the second year of its lease to house their headquarters at the Towson campus of Goucher College, which has a nationally-renowned equestrian team. The horse board licenses the school's stable and riding center. Plans include development of a Maryland horse museum and sporting library as well as a plan by Goucher to build a new \$10 million equestrian complex. This facility could eventually serve as the Horse Park System's cultural and educational center. Fundraising efforts are underway to bring this vision into reality.
- **Prince George's Equestrian Center.** Efforts to explore options to make improvements to the Prince George's Equestrian Center were put on hold after a developer, who had become greatly interested in the project, passed away. The Center remains filled to capacity with a full schedule of horse shows and equestrian events throughout the year.

course, dress in jockey silks and ride a simulated racehorse and take part in a myriad of interactive activities and demonstrations provided by 30 stables and horse discovery centers. In addition, folks were introduced to farms and stables in their neighborhoods where they could learn to ride and learn more about horses. The exhibit drew 58,000 visitors, double the number from 2016. The horse board and its network of therapeutic riding programs that offer horsemanship programs to veterans ("Horses Healing Maryland's Military") staged the second Military and Mounted Police Horse Show for veterans and first responders. Veterans from the STAR Equestrian Center in Hagerstown and Freedom Hills Therapeutic Riding in Port Deposit as well as veterans from the Caisson Platoon from Ft. Myer and six area mounted police units competed in equitation and obstacle classes. The show was such a success that it was held again at the 2018 Maryland State Fair. The horse board also offered a Horseback Jamboree at the state fair, bringing together demonstrations by Days End Farm rescued horses, mounted games, cowboy mounted shooting, and polo.

ECONOMIC IMPACT OF THE HORSE INDUSTRY IN MARYLAND – 2018 STUDY

The Maryland equine industry adds \$1.3 billion to the state's economy annually, directly contributes \$747 million to the state's gross domestic product, affects 21,532 jobs, and has an overall annual economic impact of \$2.06 billion. In addition, the study found that there are 101,457 horses in the state, making Maryland the top state in the country in terms of the number of horses per square mile – 10.5 horses per square mile. Lastly, the study found that 705,000 acres of land in Maryland are used for horse-related purposes. This study was produced by the American Horse Council and was published in May 2018. A number of Maryland equestrian organizations, including the horse board, contributed a total of \$18,000 to the study so that Maryland could be included as a "breakout" state.

STRATEGIC MARKETING PLAN

The horse board continued to implement its strategic marketing plan which includes the following key components:

- **Horseland drew a record number of visitors in its third year at the Maryland State Fair.** The Horse Show for Military Veterans and Mounted Police Officers returned for a second year. Famed Caisson Platoon from Ft. Myer, Virginia continued to be among the exhibitors. In conjunction with a group of horse industry partners, the 11-day exhibit, designed to introduce new folks to horses, became entrenched as a major industry outreach initiative. Folks could pet horses, learn how to work around them, make stick horses and jump a miniature
- **Horse Discovery Center program and the affiliated Horse School Curriculum, "Horses for Courses," continues to mature.** The program moved from pilot status to a major board initiative with outreach at four regional Horse Discovery Center workshops focused on program development and safety issues and two curriculum-development seminars led by Dr. Peggy Eppig of the Maryland Agricultural Education Foundation (MAEF). The 44 Horse Discovery Centers needed to apply for re-accreditation. Two stables were out of business and four others decided not to continue in the program. There are now 38 certified Horse Discovery Centers in 16 counties. More stables have expressed interest in applying and the program will be opened to new stables in FY 2019. Anne Litz was hired as a part-time contractual employee to help coordinate these activities as well as other horse board marketing projects.
- **Maryland filmmaker Kurt Kojala won two awards at the New York International EQUUS Film Festival for his "Wild Ponies of Chincoteague" documentary.** The third Maryland EQUUS Film Festival was held in January at the Horse Sales Pavilion-Turned-Theatre. Filmmaker Kurt Kojala from Chestertown produced a 90-minute documentary film that featured the story of a Maryland teenager who fights to overcome depression and other issues by fulfilling her dream of purchasing and training a Chincoteague pony. The film won two awards at the New

York International EQUUS Film Festival as well as a Touch of Class Award for Mr. Kojala. In February, a tour of the winning films from the EQUUS Film Festival came to our state for the third year, giving more than 500 horse lovers a chance to see over 20 award-winning films. The Fasig-Tipton Sales Pavilion on the grounds of the Maryland State Fair was turned into a theatre for the two-day festival.

- **The horse board celebrated its 20th anniversary and continued the Touch of Class Award, Horse Pals, and social media programs.** More than 130 people attended a dinner marked by remembrances and award presentations at the Timonium Fairgrounds to mark the 20th anniversary of the horse board. Baltimore Sun columnist Dan Rodricks, a horse industry aficionado, emceed the evening's festivities. The board hired Theresa Wiseman to publicize the 20th anniversary resulting in 13 television, radio, and print stories. During 2018, the horse board honored Maryland horses and riders who won national and international recognition with the monthly Touch of Class Award in these disciplines: interscholastic polo, mounted cowboy shooting, North American foxhunting, jousting, equine filmmaking, Quarter Horse competitions, American Horse Council Time to Ride national contest winners, and champion Welsh Ponies and Off Track Thoroughbreds. The horse board now has more than 1,300 Horse Pals and more than 5,000 Facebook and Twitter followers. Horse Pals is an online community that gives periodic updates on horse events in the state.
- **The horse board distributed 40,000 promotional brochures throughout the state in FY 2018 and advertised recreational horse riding throughout Maryland.** The horse board distributed 40,000 horse trails brochures and Horse Discovery rack cards throughout the state through Toth Distributors of Bowie who placed these guides statewide in tourism welcome centers, public recreation facilities, parks, and other public outlets. Clark's Elioak Farm in Ellicott City, a Horse Discovery Center, and a major tourism center also distributed materials in its farm store. All publications can be downloaded on the horse board website. The horse board participated in a two-page horse industry spread in Destination Maryland and advertised trail riding opportunities and equine spectator events in the Baltimore County tourism guide and Recreation News.
- **The horse board conducted national and international outreach.** In November 2017, the horse board helped host a delegation of South Korean

Thoroughbred breeders. The delegation was taken on tours of major Thoroughbred farms including Murmur, Bonita and Country Life Farms, and the Fasig-Tipton Mixed Sale, where they purchased six broodmares. Previously Korean buyers had purchased more than 20 two-year-old horses at the May Sale, both in 2017 and then again in 2018. In June 2018, MDA received a grant from the U.S. Livestock Genetics Export Association to take officials and Maryland Thoroughbred and Standardbred breeders to Ireland. The group consisted of MDA's Assistant Secretary Steve Connelly, MDA's International Marketing Director Theresa Brophy, Horse Board Executive Director Ross Peddicord, Maryland Horse Breeder Association Executive Director Cricket Goodall, and breeders Jim Steele and Garrett Bell. Garrett Bell who breeds Standardbreds at Winbak Farm sells horses and genetics to Ireland and made contacts for future sales. Jim Steele works for the Rooney family that operates Shamrock Farm in Maryland as well as Eyrefield House Stud in Ireland. The group visited major stud farms such as the Irish National Stud, Coolmore, Giltown, and Kildangan. They also visited agent Carol Gee at Fernhill Sport Horses and racetracks at Leopardstown, Punchestown, Fairy House, and Curragh. Lastly, they toured Eyrefield House Stud and attended the Red John Memorial Harness Meet in Cork. The group was hosted by the Irish Thoroughbred Marketing Board. In turn, a delegation from Ireland will visit Maryland in the fall of 2018.

- **Promotions and participation at 61 Maryland horse and community events.** During the year, the horse board provided sponsorships for the following events: Kid's Korral at the Maryland Million horse race, Horseland at the Maryland State Fair, Horse Industry Day in Annapolis, Eastern Shore Horse Expo in Denton, the EQUUS Film Festivals in New York and Timonium, the Hays-Heighe House Jim MacKay Award at Harford Community College, and the Maryland Horse Council.
- **The horse board had booths, attended, and/or made presentations at 46 venues** including: Royal Tours visit to Belair Mansion, Dodon Farm, and The Big Purple Barn; National Farm Bureau officers visit to Fair Hill; Governor's Buy Local Cookout; Southern Maryland Agricultural Development Commission field day at Robin Hill Farm; Annapolis Rotary Club; a legislators tour at Merryland Farm; Baltimore County Teachers Agriculture Day; New Bolton (Pa.) economic impact study unveiling; Maryland Department of Commerce officials visit to Fair Hill; Potomac Plate Night at Rosecroft;

Taste of Maryland Agriculture; Jack Stedding memorial celebration; Cecil County holiday reception; TROT dinner and annual meeting; Maryland Tourism Development Board quarterly meeting; Days End Farm Horse Rescue annual fundraising gala; Talisman Therapeutic Riding Center grand opening; Horseland at the Maryland State Fair; Maryland Travel & Tourism Summit; EQUUS Film Festival; Lisbon Horse Parade; Maryland Association of Environmental and Outdoors Educators Conference; Horse Industry Day in Annapolis; Maryland Horse Council quarterly and annual meetings; Maryland Horse Council annual barbecue; World Trade Center annual dinner; Maryland Association of Jousting annual meeting; Cecil County economic development reception; Land Rover Kentucky four-star event; Preakness; Fair Hill Races; and Fair Hill International. The horse board also attended and participated in another 15 equine industry meetings and events, and hosted meetings of the Maryland High School Rodeo Association at the department's headquarters.

- **The horse board awarded \$29,984 in grants to 20 Maryland horse organizations and individuals.** The board distributed \$29,984 in grants funding, one of the

highest amounts in the board's 20-year history.

- **Cross-Disciplinary Cooperation.** The horse board continued coordinating meetings with the Maryland Horse Industry Marketing/Leadership Circle, comprised of 14 industry partner organizations. About 30 people, representing a cross section of racing and non-racing organizations, who are largely CEOs, executive directors and marketing staff, met to discuss prospective initiatives and provide industry updates. For the fourth year, the group hosted "Horse Industry Day" in Annapolis, which included legislative training sessions, legislative office visits, and lunch for public officials at the Miller Senate Office Building. About 150 industry folks attended with outreach to nearly 70 legislators and their aides. The group also funds Horseland and in this particular year, the breakout study for Maryland in the American Horse Council's national horse industry economic impact study. Previously the group has also funded the "Racing the Times" documentary film, the writers for the School Horse Curriculum project, the industry's 2016 Economic Impact Survey as well as other marketing and advertising programs.

MHIB SELECTED STATISTICS: 2018

Category	
Number of Stable Licenses Issued	765
Number of Inspections Performed Annually	611
Percentage of Facilities Inspected and Brought into Compliance	100%
Revenue Collected from Licensing Horse Stables in Maryland	\$90,275.90
Revenue Collected from Assessment Based on Tons of Horse Feed Sold in Maryland	\$199,221
Outcomes	
Total Amount of Money Distributed as Grants for Promotional, Educational or Research Projects for Maryland Horse Industry	\$29,984
Percentage of Total Revenue Distributed as Grants for Maryland Horse Industry	15.1%
Staffed Booths or Presented Talks at Trade Shows, Conferences, Fairs and Exhibitions Promoting Maryland Equine	46

FOOD QUALITY ASSURANCE

QUALITY, GRADE AND WEIGHT CERTIFICATION

The Food Quality Assurance Program offers producers and processors a voluntary certification program for agricultural commodities including meat, poultry, eggs, fruit, vegetables, and grain. The department graders sample commodities and compare them with standards developed by the U.S. Department of Agriculture (USDA) and/or the Maryland Department of Agriculture for microbial/chemical/physical contamination, quality, size, labeling, and packaging. Official certification provides a uniform quality basis for agricultural commodities that enhances their marketability. Foreign countries, wholesale food suppliers, large grocery store chains, and state institutions, among others, often require official certification to ensure they are purchasing agricultural commodities that meet their specifications. Demand for services varies by year and season depending on the type of commodities being harvested and exported. A cost-effective and service-oriented grading program is crucial to Maryland producers competing in these markets.

The primary commodities graded by the section this year were:

- 153 million pounds of poultry
- 27 million dozens of shell eggs
- 18 million pounds of meat
- 8 million pounds of vegetables
- 21 million metric tons of grain

COMPLIANCE AUDITS

Many buyers require compliance audits of production practices as well as product certification. The Food Quality Assurance program conducts compliance audits to ensure agricultural production facilities comply with standards related to animal welfare, good agricultural practices, food security, food safety, and quality assurance. As buyers and consumers continue to demand verification of compliance with these standards, the department anticipates increased demand for compliance audits and is training additional staff members to meet that demand.

The Food Quality Assurance Program has adapted to continual changes in the agricultural commodity industry by offering the services necessary for the industry to market its products. The department's Good Agricultural Practices

(GAP) food safety program for fruit and vegetable producers has experienced a significant increase in participation. The number of producers participating in GAP increased to 38 growers inspected and certified in FY 2018. Although there were several growers new to the program, the number did not increase significantly, as some MDA-certified growers instead obtained USDA Harmonized GAP certification through the department.

The department's program has been funded to date through USDA Specialty Crop grants and has provided food safety training to over 1,200 fruit and vegetable producers. An additional 26 fruit and vegetable producers were audited by Food Quality Assurance Program compliance auditors and received USDA GAP certification. The Maryland Department of Agriculture's GAP program requirements have been revised to fully meet the requirements of the U.S. Food and Drug Administration (FDA) Food Safety Modernization Act (FSMA) Produce Rule to assist Maryland growers in achieving compliance.

FOOD SAFETY MODERNIZATION ACT PRODUCE SAFETY RULE

The department completed the second year of work related to a five-year cooperative, fully-funded agreement with the FDA to assist growers with compliance by developing a Produce Safety Program to implement the FSMA Produce Rule. The Maryland Department of Agriculture, University of Maryland Plant Sciences Department, University of Maryland Extension, and University of Maryland Agricultural Law Education Initiative cooperatively provided education, outreach, and technical assistance to Maryland fruit and vegetable growers to assist them in compliance with the rule.

The department provided outreach to agricultural organizations, produce growers, and relevant state/local government agencies via mailings, informational meetings and attendance at various grower meetings.

Technical assistance was provided to growers through On Farm Readiness Reviews. An On Farm Readiness Review consists of a voluntary on-site, non-regulatory visit to a produce grower by a team comprised of one department regulator, one University of Maryland specialist, and one local University of Maryland Extension representative. The team evaluates a growers' compliance with the FSMA Produce Rule and provides growers with notes on what is in compliance and

areas that need improvement. The produce grower is given resources to assist in correcting any potential problem areas. The FDA-approved Produce Safety Alliance Produce Safety Rule course was held regionally to assist produce growers meet the FDA mandated training requirements. To date, the department has provided the FDA mandated training to 155 produce growers. Inspection and enforcement for the Produce Safety Program will not start until FY 2019.

EGG INSPECTION

The Egg Inspection program enforces the Maryland Egg Law. Inspections are performed at the producer, wholesale, food service, and retail levels to ensure eggs sold in Maryland meet the standards for quality, size, refrigeration, microbial and physical contamination, labeling, and record keeping. The program also registers egg wholesalers and packers. Portions of the labeling, record keeping, and registration requirements provide traceability in case of a Salmonella enteritidis outbreak. Other sections of the law were established to reduce the risk to consumers of food-borne illness. Eggs found to be out of compliance with the established standards are removed from sale, and violation notices are issued to the responsible parties. Inspection activities are funded through the collection of \$.0026 per dozen of eggs sold in Maryland.

The percentage of sampled eggs found to be in compliance with the Maryland Egg Law increased to 84.92 percent this year – up from 80.76 percent last year. The number of lots being inspected decreased as a contractual position that conducted inspections resigned.

The department continues to conduct Country of Origin labeling reviews for USDA in conjunction with egg inspections. Federal reimbursement for Country of Origin reviews has helped reduce the costs of conducting egg inspections.

ORGANIC CERTIFICATION

The USDA-accredited Maryland Organic Certification Program certified 124 farms and handlers of organic products during FY 2018. The program also registered an additional two farms as organic that are exempt from the certification requirements as they have organic sales of less than \$5,000 per year.

Maryland organic producers and handlers continue to benefit from the federal Cost-Share Reimbursement Program funded by the USDA. This cost-share program allowed the department to reimburse 75 percent of the fees growers paid for certification.

GRAIN LAWS

The department regulates all persons in the business of buying, receiving, exchanging, or storing grain from a grain producer. Licenses are issued to businesses that meet requirements set by law for insurance and financial status. There are four categories of licenses issued based on the number of bushels purchased in a calendar year. Fees range from \$50 to \$300. A Directory of Licensed Grain Dealers is published and distributed annually. The department licensed 41 businesses with 87 locations in FY 2018.

POULTRY AND RABBIT SLAUGHTER

The poultry and rabbit slaughter program helps small poultry and rabbit producers slaughter their animals on farm and sell them to restaurants, at farmers markets, and other locations in Maryland. The program consists of food safety training, basic food safety requirements during slaughter, and inspections to verify that good food safety practices are followed. The department certifies producers who follow the requirements. Since the program's inception in May 2010, more than 700 producers have been trained and 35 producers are currently certified.

WEIGHTS AND MEASURES

The regulation of Weights and Measures is one of the oldest continual functions of government. The Weights and Measures Program ensures that consumers get what they pay for whether it is a gallon of gasoline, a truckload of gravel, or a pound of hamburger. Purchases that require measurement affect virtually every resident in the state and involve millions of individual transactions annually. Having uniform standards of measurement creates fairness and confidence in the marketplace and benefits both buyers and sellers.

The department is an active, voting member of the National Conference on Weights and Measures (NCWM). The NCWM is comprised of state and federal government officials as well as private industry representatives throughout the United States. The NCWM provides a professional forum for the discussion and development of uniform policy and protocols that guide the regulation of weights and measures.

There are a total of 60,703 weighing and measuring devices in commercial use in Maryland at 8,852 separate businesses locations. The department has 18 inspectors who are specially trained and certified to test and inspect these devices according to established protocols to make sure they are within the required tolerances. Devices failing inspection may be taken out of service until corrected by the owner. Inspectors also visit stores to verify that packaged products contain the quantities specified and that consumers are being charged the correct prices at checkout.

In FY 2018, the field staff conducted 25,256 device inspections. Inspectors also tested 5,474 lots of prepackaged commodities. Price verification inspections were conducted at 30 stores.

In FY 2018, the field staff investigated 455 consumer complaints. The majority of the complaints were related to gasoline sales. Consumer complaints are given priority over routine inspections and require a significant amount of staff hours to investigate.

The registration of approximately 6,700 businesses has created a database that has become an effective management tool. The purchase of electronic inspection software for inspections has replaced the need for paper reports. These programs will maximize efficiency, government transparency and assist in cost reductions. Administrative staff is able to target the most critical areas and all field inspectors now possess a tool to plan inspection work more efficiently, thereby reducing driving time and providing more uniform inspection coverage. This information has helped management prioritize the use of limited program resources to better protect Maryland consumers and maintain a level playing field for industries that operate in the state.

The National Institute of Standards and Technology (NIST) Office of Weights and Measures Metrology (OWMM) recognizes

Maryland’s Metrology Laboratory. The program has one full time metrologist who is a signatory with NIST OWMM. Our goal is to increase our laboratory calibrating scope as additional laboratories are upgraded.

The Weights and Measures Program also participates in the National Type Evaluation Program (NTEP), which tests and inspects the accuracy of new measuring and weighing devices and systems before they are approved for use in commerce. NTEP laboratories are authorized by the National Conference on Weights and Measures. Meeting the required NTEP performance standards and procedures denotes a high degree of technical and professional competence. Authorization is specific to a type of weighing or measuring device. The Maryland NTEP laboratory is authorized in 14 areas of evaluation. All related costs are paid by the participating manufacturers requesting NTEP services.

The program is currently in the midst of replacing aging lab and field equipment necessary to carry out the program’s responsibilities and improve the efficiency of the program. The field program and laboratory are special funded, and industry has always been very supportive of Weights and Measures and assisting the program in securing adequate funds to ensure our presence in the marketplace. As technology changes in the marketplace, so must the Weights and Measures program. Inspectors utilize electronic inspection software which has allowed the field staff to go paperless and increase efficiency. Inspectors also participate in specialized training and accredited testing in order to stay on top of the latest trends in the field. In addition, inspectors have recently taken on the responsibility of inspecting gas pumps and scales for credit card skimming devices as their presence increases throughout the state. Weights and Measures is as much needed today as in the past and continues to provide a vital service to consumers and business owners alike.

WEIGHTS AND MEASURES ACTIVITIES TABLES: ADMINISTRATIVE CONTROLS AND MISCELLANEOUS

Activity	2016	2017	2018
Weighing and Measuring Devices Registration Certificates Issued	6,824	6,810	6,718
Type Evaluation of Devices Conducted (NTEP)	50	32	17
Citizen Complaints Received and Investigated	423	430	455
Disciplinary Hearings, Criminal Arrests, Summonses Obtained and/or Civil Penalties	2	3	13

Aside from day-to-day administration, coordination and support of the laboratory and field activities, Weights and Measures is involved in the registration of commercial weighing and measuring devices, and the examination and licensing of individuals for specific functions.

WEIGHTS AND MEASURES ACTIVITIES TABLES: FIELD INSPECTION AND TEST EFFORT

Activity	2016		2017		2018	
	% Violations	Total Tests	% Violations	Total Tests	% Violations	Total Tests
Weighing Systems						
Large Scales	17.1	661	15.5	817	15.7	700
Medium Scales	8.1	394	13.6	398	21.4	608
Small Scales	16.3	5,527	15.8	4,399	18.5	6,811
Liquid Measuring Systems						
Retail Gasoline Meters	17.5	16,472	16.8	18,247	21.5	14,896
L P Gas Meters	16.6	538	13.0	407	25.5	157
Vehicle Tank Meters and Other Large Meters	14.0	964	11.2	890	18.7	375
Grain Moisture Meters	6.3	95	3.7	108	2.8	105
Programmed Tare Inspections	15.6	1,369	11.6	856	12.4	1,975
Price Scanning and Method of Sale	2.0	2,621	2.3	3,255	2.2	2,386
Delivery Ticket Inspections	0.4	1,575	0.4	1,484	6.8	1,289
Package Lots	21.6	7,518	22.7	4,460	15.7	5,474

Inspection and testing of packages involve not only correct weight or measure determinations, but compliance with method of sale and labeling requirements.

WEIGHTS AND MEASURES ACTIVITIES TABLES: LABORATORY EFFORT

Inspection and Test	*2016		*2017		*2018	
	# Tested	% Rejected	# Tested	% Rejected	# Tested	% Rejected
Weights	167	15	593	19	1,384	9
Volumetric Measures, (Non-Glass)	37	35	32	53	47	57
Length Devices	0	0.0	0	0.0	0	0
Temperature Devices	0	0.0	0	0.0	0	0
Timing Devices	0	0.0	0	0.0	0	0
Volumetric (Glass)	0	0.0	0	0.0	0	0
Scales/Meters	0	0.0	0	0.0	0	0
Standard Grain Samples	266	N/A	147	N/A	146	N/A

**The laboratory is reorganizing with one full time metrologist and in hopes of increasing laboratory scope within pursuing years.*

MARYLAND AGRICULTURAL FAIR BOARD

The Maryland Agricultural Fair Board was established by an act of the state legislature in 1937. Originally known as the Maryland State Fair Board, the office was based at the Maryland State Fairgrounds in Timonium. When the Maryland Department of Agriculture (MDA) was established, the office was moved to Annapolis and renamed the Maryland Agricultural Fair Board.

The board is composed of eight members appointed by the Governor. Term of office is five years and a member may serve a maximum of two terms. Members may come back on the board after a break in service. The current board divided the state into regions that individual board members manage. The Board meets quarterly and communicates throughout the year by phone and e-mail. Most meetings are held at the department.

Funding comes through the Maryland Racing Commission by a special grant and is made up of unclaimed pari-mutuel tickets and various fees. The current annual budget is \$1.46 million.

The grant process starts in December and is finalized in April. Grants to fairs and shows may be used for ribbons, awards, and premiums only. Currently the board funds approximately 165 events. These range from the Maryland State Fair, to county fairs, to local community shows, to youth activities in 4-H and FFA.

The board publishes an annual guide listing fairs and shows that it funds. These brochures are distributed to all welcome centers on state highways, all extension offices, all fairs and shows, all chambers of commerce, all libraries, all county farm bureaus, and the Maryland Farm Bureau. It is also posted on the department's website.

Racing revenue continues to be in a state of change and this affects the grants given out by the board. The board holds regional budget meetings throughout the state to meet with each group to review their request, financial reports, and fair activities.

FY 2018 FINAL BUDGET FIGURES

0100 – Personnel Costs.....	\$8,421
0300 – Communication Costs.....	\$1,564
0400 – Travel.....	\$6,298
0700 – Motor Vehicle Operations.....	\$795
0800 – Contractual Services.....	\$3,077
0900 – Supplies and Materials.....	\$780
1036 – Replacement Equipment.....	\$0
1207 – Grants to Non-Government Entities.....	\$751,112
1299 – Grants, Subsidies & Contribution.....	\$602,516
1300 – Fixed Charges.....	\$11,838

TOTAL APPROPRIATION- \$1,386,401



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PLANT PROTECTION AND WEED MANAGEMENT

APIARY INSPECTION

The department's Apiary Inspection Program works with beekeepers to control honeybee diseases, parasitic mites, and other pests in order to maintain healthy colonies for the pollination of Maryland crops. Honeybees pollinate crops valued at more than \$40 million. Maryland fruit and vegetable growers rent 5,000 colonies a year to improve pollination. Beekeepers' colonies are essential to Maryland because parasitic mites have nearly eliminated feral honeybee colonies.

American foulbrood is the most serious brood disease of honeybees and can destroy a colony in one year. In Calendar Year 2017, the six colonies that inspectors found to have American foulbrood, as diagnosed by the U.S. Department of Agriculture's (USDA) Bee Laboratory in Beltsville, were destroyed to prevent the spread of this bacterial disease into healthy colonies. The incidence of disease remains relatively low at 0.19 percent of the colonies inspected.

Canine Training and Certification. In 2015, the apiary program trained and certified a dog and handler to detect American foulbrood disease in honeybee colonies. Mack is a yellow Labrador retriever who has been trained to detect and alert his handler to the presence of American foulbrood. Now that Mack is on the job, he works to reduce the incidence of American foulbrood in Maryland bee colonies during fall and winter when the bees are dormant. A trained dog can inspect 100 honeybee colonies in 25 minutes; an average human inspector can inspect around 50 colonies in one day. Early detection of the disease will save Maryland beekeepers substantial monetary loss from eradication of diseased colonies and destruction of infected equipment. In total, Mack inspected 2,254 colonies in 2017. A second dog was purchased in June of 2017 to be trained on the American foulbrood scent. Clark, a two-year-old beagle-springer spaniel mix, was

purchased by the state under the Farm bill. He was trained in 2017 through May 2018. Unfortunately, Clark did not pass the exam required to become a certified American foulbrood inspector. Clark has since retired and was adopted by the department's chief apiary inspector. Another canine named Tukka was acquired in June 2018 and began his training.

Varroa mite (*Varroa destructor*) populations were again very high in Maryland in 2017, and brood problems and hive death attributed to this pest. One of the serious problems caused by varroa mite is the transmission of viruses that can be fatal to the hive. Ten prevalent honeybee viruses have been discovered and the majority have an association with varroa mites. Therefore, controlling varroa populations in a hive will often control both the associated viruses and symptoms of the viral diseases.

Africanized Honeybees (AHB). The department is working with two groups – the Mid-Atlantic Apiculture Research and Extension Consortium (MAAREC), to provide information to the general public about emergency incidents, and the Apiary Inspectors of America (AIA), for information on the control of AHB movement other than through natural spread. The department worked with the Port of Baltimore on two separate occasions in summer 2017 when two swarm calls located on large container ships came in from other ports. Both swarms were tested and found to be European honeybees, not Africanized honeybees, and were eradicated to prevent the spread of disease.

The small hive beetle (*Aethina tumida*) was detected in packaged bees, and reported or detected in all 23 counties as well as Baltimore City in 2017. Colonies are treated and monitored to ensure successful control of the beetles. There have been reports of larval damage to established colonies. The small hive beetle is both a major pest of stored equipment

and in honey houses, rendering stored honey in the hive unmarketable.

Apiary Inspection Permits. Entry permits were issued for 3,865 honeybee colonies to move into Maryland for overwintering and beekeeper purchase. Exit permits were issued for 2,474 colonies to move out of Maryland, primarily for pollination services. For the tenth year, Maryland beekeepers have sent colonies to California for almond pollination. About 1,600 colonies were transported to California in winter 2017 for the 2018 almond pollination season.

Surveys. The Apiary Inspection Program assisted with one survey in 2017. The survey information can be found listed in the Pest Survey section of this report.

NURSERY INSPECTION AND PLANT QUARANTINE

The Maryland Nursery Inspection Program serves the state's nursery and greenhouse industry which continues to be a leading component of Maryland's number one industry, agriculture. The most recent census (2012) for the green industry in Maryland currently ranks it second among commodities, with a total of about \$960 million in farm income. Other horticultural products and services boost total gross receipts to more than \$1.96 billion.

A primary goal of state plant protection and quarantine efforts is to facilitate the production, sale, and distribution of healthy and pest-free Maryland nursery stock. This is accomplished in large part by inspection and certification activities conducted on-site by the department's Plant Protection and Weed Management staff. Maryland law and reciprocal agreements with other states require annual production facility and sales location licensing for all producers and suppliers of nursery stock in the state. Production nurseries are inspected, at minimum annually, to ensure that plant material they produce is free of dangerously injurious plant pests. Additionally, plant dealers are inspected regularly to ensure plant materials are received from suppliers in a healthy and pest-free condition, and maintained in that condition for wholesale and retail sale.

In Calendar Year 2017, the Maryland Nursery Inspection Program licensed 299 nurseries, as well as 1,446 plant dealers and plant brokers. In 2017, 9,375 acres of nursery stock and 11,416,829 square feet of greenhouse production were certified. Plant Protection and Weed Management staff performed routine inspections at 760 Maryland locations.

In general, the health of Maryland-produced nursery stock was found to be excellent. Additional certification activities for Fiscal Year 2017 involved shipment specific inspections. These

included 117 state phytosanitary certificates issued to 13 states and U.S. territories. Phytosanitary inspection and certification is performed to ensure Maryland's agriculture and green industry is compliant with established U.S and state domestic quarantines and phytosanitary requirements for Maryland-produced plant material and grain commodities. In 2017, 59 shipment specific inspections were performed, and federal phytosanitary certificates were issued to export Maryland-grown and produced plant material and grain to seven foreign countries – ensuring that Maryland-produced agricultural commodities meet international quarantine regulations.

A continuing effort to prevent further introduction to, and slow the possible spread of boxwood blight, *Cylindrocladium buxicola* (syn. *Calonectria pseudonaviculatum*) in the Maryland nursery and landscape industry occupied hundreds of hours of staff time throughout the year. Nursery Inspection Program staff were again involved not only in the process of inspecting for evidence of the disease at the majority of establishments visited, but were also engaged in issuing condemnation/seizure and pest control orders when infected plant material was found. Program staff were also tasked with overseeing the destruction of boxwoods infected with this highly destructive, infective, and easily transmitted disease.

An additional plant pathogen, *Phytophthora ramorum* – the causal agent of sudden oak death, and a plant disease which has many host species that are common in the green industry and nursery trade – was detected by survey in 2016. The department and the USDA conducted a follow-up survey. The agencies worked together to develop a compliance agreement for the affected commercial establishment. Several nursery inspections and surveys were also conducted throughout the year at this nursery to ensure eradication of this destructive disease.

The department's program staff continued its role evaluating federal (USDA) permits to move plant germplasm and plant and insect pests into the state for purposes of scientific study, breeding (plant germplasm), controlled release (insect and weed biological control organisms), and evaluation. The department regularly reviews permit applications to ensure that importers meet security and containment requirements for importation of otherwise prohibited or restricted taxa. In addition to initial permit review, there are site visits and follow-up inspections performed by the department.

In a related concern, the department's Plant Protection and Weed Management Program is one of a small group of stakeholders nationwide participating on a working group that will evaluate the restructuring of the USDA Animal and

Plant Health Inspection Service (APHIS) Plant Protection and Quarantine (USDA APHIS PPQ) Post Entry Quarantine (PEQ) program. USDA APHIS PPQ is considering a significant restructuring of the PEQ program after it was reviewed by the Agricultural Quarantine Inspection Board. This working group currently participates in telephone conferences with representatives from the USDA, and other states, and is working towards modifying and streamlining import processes that will increase efficiency, while at the same time reduce risk. As in the past, until policies and protocols are changed, department program staff will continue to conduct post entry quarantine and facility inspections per status quo within the state of Maryland.

In another matter, distribution of information to the green industry and enforcement of new invasive plant regulations that took effect in 2016 have proven to be an additional challenge for program staff. Educating, providing outreach, inspections, and enforcement of these regulations has become very time consuming and demanding.

Staff continues to be vigilant and participate in inspections and surveys aimed at early detection and slowing the spread of serious pests and diseases that are not known to occur in the state. Insect pest threats like the Asian longhorned beetle (*Anoplophora glabripennis*) and spotted lanternfly (*Lycorma delicatula*), and plant diseases such as sudden oak death (*Phytophthora ramorum*) and thousand cankers disease of walnut (*Geosmithia morbida*), are considered high risk Maryland. Additionally, field and clerical staff work year-round to ensure that licensing and compliance regulatory statutes are met by the industry.

In 2017, all program staff members attended training workshops, conferences, professional meetings, and field exercises – both in the state and regionally. On-going trainings and events has enabled staff to remain informed on developing new issues and to better serve the program, the department, industry stakeholders, and the citizens of Maryland.

PEST SURVEY

The Cooperative Agricultural Pest Survey (CAPS) and Farm Bill surveys are joint projects between the department and the USDA APHIS Plant Protection and Quarantine (PPQ) program. The USDA recommends specific pests of quarantine export significance as survey priorities and provides funding for these surveys. These cooperative survey programs provide necessary data used to certify Maryland products for export to many countries. These surveys also allow for continued outreach and education.

CAPS and Farm Bill surveys document the presence or absence of exotic pests in Maryland, support PPQ exotic pest survey activities, and provide state-specific data for exotic pests in the United States. Early detection of exotic pests before they become established aids in eradication or control efforts protects Maryland agriculture, nursery stock, and the environment from potential devastating losses. Federally funded CAPS surveys include: exotic wood borers, soybean commodity, and imported fire ant (*Solenopsis invicta*); the Farm Bill surveys include: *Phytophthora ramorum* (nursery), exotic pests of honeybees, small fruit commodity, and grape commodity.

In Calendar Year 2017, the department deployed and monitored 377 insect traps and collected 5,594 samples from these traps. There were seven extensive surveys targeting 36 exotic pests that impact nursery stock, apiaries, fields, vineyards, orchards, and nursery stock.

CAPS SURVEYS

Soybean Commodity. Soybean is the second most valuable crop grown in Maryland, behind corn. For this reason, ensuring that our state is free of known exotic pests of this commodity is of great importance. This survey was conducted from June through mid-October 2017 in four counties known to have high production rates of soybean, based on harvested acreage in previous years. None of the targeted pests were found to be present in any of the 64 traps throughout the sampling period. Additionally, a visual survey was conducted for the bean plataspid (*Megacopta cribraria*), a bug of particular concern within Maryland and a known pest of soybean. A visual survey was conducted at each site on a bi-weekly basis and resulted in no findings of this pest.

Exotic Wood Boring Beetles. USDA regulations require all imported wood packing material to be treated, so that any insect living in the wood should be killed. However, some packing material is not properly treated, which can cause exotic wood borers to be shipped to the U.S. and thus be introduced into our environment. Bark beetles can be extremely destructive and, in parts of the world, have been known to destroy large acreages of forest. In 2017, ten sites that receive goods packed with wood dunnage were surveyed for exotic wood boring bark beetles. During the bi-weekly trap checks, a visual survey for spotted lanternfly (*Lycorma delicatula*), a newly introduced invasive insect from Asia, was also completed. This survey ran from late March until late October 2017. All samples were negative for the species being targeted. Additionally, one of the sites surveyed for exotic wood boring beetles also housed a blacklight trap. This trap is

used for long-horned beetle detection, but did not detect any of the high priority pests for which we were surveying.

Red Imported Fire Ant. The red imported fire ant (*Solenopsis invicta*), a stinging insect native to South America, is occasionally shipped out of its regulated area in the southern United States. Despite its quarantine, which requires a wide variety of commodities to be treated or certified free of fire ants before being transported, some infested nursery stock does make its way into Maryland. The yearly fire ant survey focuses on tropical plants arriving from the southern U.S. In Calendar Year 2017, 137 sites were surveyed and five were found positive for imported fire ant. Sites were issued eradication treatment orders under a Maryland Department of Agriculture Treatment Order; they have completed the treatments, have been resurveyed, and were found free of imported fire ant.

FARM BILL SURVEYS

Exotic Pests of Honeybees. Honeybees are important for many reasons, but perhaps the most important is that they are the sole or main pollinator of various crops, which makes them a vital part of Maryland's agriculture. As honeybee populations decline from a variety of issues, it is vital to identify and screen for any possible exotic pests which could exacerbate the situation. Honeybees have many exotic and invasive pests. A partial list includes members of the same genus, but different species or subspecies, such as the Asian or Eastern honeybee and its subspecies or strains (*Apis cerana*), the Africanized honeybees (*Apis mellifera scutellata*), and the Cape honeybees (*Apis mellifera capensis*). Asian giant hornet (*Vespa mandarinia*) and its subspecies, the Japanese giant hornet (*V. m. japonica*), the Asian hornet (*V. velutina*), and other *Vespa* species are also included in this list of exotic pests. Rounding out the list are *Tropilaelaps* species, parasitic mites which feed on the hemolymph (blood) of developing honeybees. Although these pests have not been found in Maryland, it is important to have a plan in place to survey for them, and react swiftly and appropriately should they appear to prevent them from becoming established. Eight sites were selected throughout Maryland. Particular emphasis was put on sites near transportation routes or other high-risk pathways, which are known as possible areas of introduction for foreign species. From late May until mid-October 2017, Lindgren funnel traps were placed at each site and examined once every two weeks for the presence of any of these pests, particularly *Vespa* species. No target species were found throughout the survey, which was conducted by the apiary inspection staff.

Small Fruit Commodity Survey. The small fruit (blackberries, blueberries, cherries, raspberries, and strawberries) crop in Maryland is growing, especially with growers that participate in u-pick programs. In the latest census from 2012, Maryland had 491 growers growing approximately 462 acres of small berries. The 2017 survey was conducted from June through October in eight orchards across six Maryland counties with an emphasis on orchards that had as many different types of small fruit as possible. The targets were two invasive moth pests and three invasive fruit fly species. At each orchard, two standard bucket traps, one delta sticky trap, one Jackson body trap, and one baited yellow sticky trap card were placed and baited with lures that are attractive to the specific pests. The traps were serviced bi-weekly during the survey period. One of the fruit flies being surveyed for the spotted wing drosophila (*Drosophila suzukii*) was found to be present at each of the orchard sites being surveyed. This nuisance pest has been reported anecdotally throughout Maryland, but until this survey, had not been officially confirmed.

Grape Commodity Survey. Vineyards and wineries are an expanding industry in the state of Maryland. However, as vineyard acreage increases, the opportunities for invasive pests to be introduced and become established also increase. This survey was conducted from the middle of June until late October 2017 in 10 vineyards covering five Maryland counties, in order to confirm the absence of invasive moth pests. At each vineyard, two standard bucket traps, one delta sticky trap, and one Jackson body trap were placed. Each trap was baited with a lure attractive to a different moth of concern. These traps were checked once every two weeks throughout the sampling period and no target species were discovered. During the bi-weekly trap checks, a visual survey for spotted lanternfly (*Lycorma delicatula*), an invasive insect from Asia, was also done and none were found to be present. An additional part of this survey involved a visual survey of grape vines, looking for a grape phytoplasma and a fungal disease called brown rot. The department's plant disease specialist ran both disease surveys. There were 301 leaf samples taken, all samples were negative for both the grape phytoplasma and brown rot.

Phytophthora ramorum Nursery Survey. The *P. ramorum* survey covered nurseries, garden centers, and landscape sites. Staff visited seven nurseries and garden centers receiving plant material from Oregon, California, and Canada, and inspected 3,814 azalea, camellia, kalmia, pieris, rhododendron, and viburnum plants. Less than 8 percent of plants examined exhibited symptoms similar to those caused by *P. ramorum*. A total of 277 symptomatic samples

of different plant species were collected and tested for *Phytophthora spp.* by ELISA kit, and 10 percent of samples tested positive. All *Phytophthora spp.* positive samples were submitted to the Cornell University Diagnostic Clinic for *P. ramorum* confirmation. All of these *Phytophthora spp.* positive samples were determined to be negative for *P. ramorum*. Additionally, a survey was done at the 2016 positive site, in order to confirm that *Phytophthora ramorum* was no longer present. Plants were inspected both in the spring and again in the fall. In the spring survey, 63 symptomatic plants were collected and tested for *Phytophthora spp.* by ELISA kit, and 15 of these were positive. In the fall survey, 39 symptomatic plants were collected and tested, and 10 of these tested positive for *Phytophthora spp.* All *Phytophthora spp.* positive samples were then submitted to the Cornell University Diagnostic Clinic for *P. ramorum* confirmation. All of these *Phytophthora spp.* positive samples were determined to be negative for *P. ramorum*. The department's plant disease specialist supervised and conducted this survey.

DIAGNOSTIC LABORATORIES

The department's Plant Protection and Weed Management program laboratories provide testing, analyses, and identifications to support the Maryland Department of Agriculture's (MDA) programs, as well as providing answers to inquiries from outside the department.

Entomology Laboratory. In 2017, the Entomology Laboratory received a number of bed and bat bugs (Hemiptera: Cimicidae) as well as several common pantry pests for identification. Unusual submissions included winged adults of the dark Southeastern subterranean termite, *Reticulitermes virginicus* (Isoptera: Rhinotermitidae), a fall-emerging native species that appeared in September in Annapolis. Adults and egg cases of brown widow spiders, *Latrodectes geometricus* (Araneae: Theridiidae), were collected in Beltsville. This species appears to be expanding its range north and west by human activity. Balsam woolly adelgid, *Adelges piceae* (Hemiptera: Adelgidae), was detected in Garrett County. A rather uncommon large southern visitor, the black witch moth, *Ascalapha odorata* (Lepidoptera: Erebidae/Noctuidae), was collected in Glenelg, and several Florida predatory stink bugs, *Euthyrhynchus floridana* (Hemiptera: Pentatomidae), were observed in survey traps and home landscapes. The anticipated four-year acceleration of 'early' Brood X cicadas, *Magicicada sp.* (Hemiptera: Cicadidae), offered a small taste of the Big Brood's emergence coming to much of Maryland in 2021.

Plant Pathology Laboratory. The plant pathology laboratory provides testing, analysis, and recommendation services

for problems caused by abiotic (water, soil, chemical, and management) and biotic pathogens (fungi, bacteria, viruses, and nematodes), to support the department's programs. The pathology laboratory received 91 plant samples for diagnosis and management solutions during the 2017 growing season. A majority of the samples came from nursery inspectors, some from pesticide inspectors, landscapers, and homeowners. This year, several samples tested were due to pesticide damage, especially early in the season after heavy rain. In addition, 12 percent of samples received were abiotic-related, such as watering issues, soil management, pesticide damage, cold damage, etc. while other samples were caused by biotic pathogens, such as fungi, bacteria, viruses, and nematodes. The majority of samples received were caused by fungal pathogens. Management strategies based on an integrated pest management approach were recommended for these problems.

The exotic disease, boxwood blight, *Cylindrocladium buxicola* (syn. *Calonectria pseudonaviculatum*), remained a high priority problem. Ten nurseries are under compliance agreement for clean and disease-free boxwood production. Several samples were received to check for the infection of *C. buxicola* fungi and samples from three nurseries tested positive for the pathogen. Necessary action was recommended to eradicate the source. In 2017, the plant pathology lab also participated in the *Phytophthora ramorum* Nursery Survey and the Grape Commodity Survey. Detailed information can be found in the Pest Survey section of this annual report.

Greenhouse Laboratory. Mile-a-minute (MAM) weed plants (*Persicaria perfoliata*) were produced for the integrated pest management and biological control program for insect colonies that require food and plant material. Over 1,650 MAM stem cuttings were taken and 1,586 MAM plants were transplanted and grown in the greenhouse to be used as food for colonies of the stem-boring weevil, *Rhinioncomimus latipes*.

Virus testing continued on eight varieties of strawberry plants in support of a Memorandum of Understanding with a strawberry breeding company. Testing continues on one additional variety of strawberry brought into the greenhouse in 2015. The poor condition of the original plants from this breeding company required testing of the variety to continue into the 2017 season. Indicator and positive control strawberry plants were maintained throughout the year to support this testing.

Virus indicator plants – plants that show symptoms in the presence of certain viruses – of fifteen different genera and species, are seeded and transplanted weekly to be used, when

needed, to test plants submitted by the nursery inspection staff for possible presence of virus diseases. Additional support for the Nursery Inspection Program is provided when plant specimens, believed to be infected with disease are brought in by nursery inspectors and held at the greenhouse for observation and further tests.

A variety of other programs take place at the greenhouse on a yearly basis. These include plants produced to support department displays at the Maryland Home and Garden Show as well as the Maryland State Fair. Plants are also grown and maintained for use during the Certified Professional Horticulturist (CPH) Exams given at MDA's headquarters twice a year and proctored by program staff, in cooperation with the Maryland Nursery, Landscape, and Greenhouse Association.

PLANT CERTIFICATION

The Maryland Ginseng Management Program protects American ginseng, *Panax quinquefolius*, by monitoring the harvest, and by licensing diggers and dealers of wild, wild-simulated, woods-grown, and cultivated ginseng. The department conducts a management program in cooperation with the U.S. Fish and Wildlife Service (USFWS). The program follows established protocols and Convention on the International Trade in Endangered Species (CITES) regulations to ensure continued viability of this potentially threatened native resource and to protect it from over-harvest. Through this program and the inspection and certification process, licensed dealers are enabled to legally sell the wild-harvested plant interstate and in international markets.

The department also works with growers of wild-simulated and woods-grown ginseng to allow them to meet regulatory requirements, and to market and export their highly valued crops. These roots, both dried and fresh (green), are highly prized, especially in China and Korea, for properties that putatively promote good health. High quality native ginseng root continues to be in great demand on the international market and prices for wild American ginseng generally increase over time. In 2017, however, prices remained low for the second straight year, rarely exceeding \$500 per pound for dry ginseng. Possible factors contributing to this decrease are mentioned below. During the 2016-2017 season, the program licensed 18 ginseng dealers and 209 ginseng collectors in the state. For the 2017-2018 season, those numbers are 11 and 175, respectively. Any number of factors may be responsible for the declines of dealers and growers. Licensing for ginseng dealers and collectors starts after July 1 of each year as the collection season for wild harvested ginseng does not begin

until September 1. The harvest season ends December 15 and the sales season ends March 31 of the following year. The harvest numbers reported are for the program season beginning September 1, 2016 and ending March 31, 2017.

Over the 2016-2017 harvest and sales season, the certification program inspected, collected size and age data, weighed, and certified 108.78 pounds of dry wild ginseng root, 7.34 pounds of green (fresh) wild ginseng root, 30 pounds of wild simulated dry ginseng root, and 122.8 pounds of wild simulated green ginseng root. No woods-grown or cultivated ginseng root were certified for the 2016-2017 harvest season. For the purpose of this report, both artificially propagated (cultivated and woods-grown) and wild simulated ginseng harvests are being recorded as artificially propagated. Both artificially propagated and wild simulated ginseng – distinctions recognized by the USFWS and CITES – are being grown as alternative agricultural crops in Maryland.

As compared to numbers recorded for 2015-2016, the 2016-2017 harvest and certification numbers are about 51 percent lower for dry wild ginseng and 17 percent greater for artificially propagated dry ginseng. The amount of wild green ginseng root certified in the 2016-2017 season represents about a 35 percent increase as compared to 2015-2016. For wild simulated green root there was a dramatic increase of 96 percent compared to 2015-2016. As reported since 2014, changes in certification of green (fresh) ginseng likely parallel market demand for and the domestic use of fresh ginseng in the U.S. domestic market and the rise of a relatively novel type of ginseng buyer.

Fluctuations in the amount of Maryland ginseng certified and sold likely reflect the demand and pricing on the international market and more recently a specialty sector in the domestic market, and do not necessarily directly reflect the status or abundance of wild American ginseng in Maryland. Many ginseng collectors and growers refuse to sell ginseng in a depressed market, preferring to wait until the price increases with a market rebound. As is done each year, harvest and sales data were gathered and reported in accordance with the USFWS and CITES requirements. The USFWS' Office of Management Authority continues to find Maryland's wild ginseng harvest as sustainable and "non-detrimental" to wild American ginseng populations in Maryland.

The amount of ginseng cultivated and certified by the department, including woods-grown and wild-simulated designations in Maryland, continues to keep pace with the amount of wild ginseng harvested and certified in the

state. This reflects both continuing interest in ginseng as an alternative crop and the ability of Maryland growers to produce high quality ginseng.

Responses to annual questionnaires mailed to ginseng collectors and dealers at the time of licensing were modified in 2015, 2016, and again in 2017, to gather current, pertinent information on program participants concerns and opinions. Many respondents continue to relay that the incidence of out-of-season poaching of wild ginseng in Maryland remains high. There was also concern regarding the lack of on-the-ground enforcement relative to illegal ginseng harvest. Also, expressed was the sentiment that preventing legally licensed collectors from harvesting on state-managed land actually promotes poaching, as there are fewer legal harvesters active to report illegal activity. Most participants in the Maryland Ginseng Management Program view themselves as stewards and protectors of a natural heritage.

In 2016-2017, the department continued to evaluate harvest trends and watch for positive developments resulting from a regulation change made July 1, 2010. As of that date, the harvest season for wild American ginseng in Maryland was changed from starting on August 20 to starting on September 1 and lasting through December 15. This change effectively gives the ginseng fruit longer to ripen (on average) and insures a higher percentage viability of seed. This allows wild ginseng populations a better opportunity for recovery from harvest pressures. It remains to be documented that these changes have affected any population increase in the field. It is expected that any change will be gradual. This revision in harvest dates also complies with harvest season modifications highly recommended by the USFWS. This change not only brings all states with wild American ginseng populations into harmony in terms of parallel harvest season dates, but is also based on long-term research indicating that the revision is necessary to ensure a longer season for seed development and ripening that will enhance long term survival of wild American ginseng in its native range.

In July of 2017, the department's Ginseng Management Program staff had the opportunity to attend the American Ginseng Coordination Meeting between USFWS and state and tribal ginseng management programs as well as subsequent meetings and symposiums with educators, growers, dealers, and the herbal industry in Morgantown, West Virginia on July 11-14, 2017. This meeting allowed the 19 states and one tribe that were present to openly collaborate with USFWS representatives to discuss the many critical issues currently being faced by each stakeholder. These shared issues include

the potential black market sale of ginseng and methods used by law enforcement to combat such sales, ginseng market trends, data collection and certification methods, and state/tribe licensing fees issued for collectors and dealers.

WEED INTEGRATED PEST MANAGEMENT

The department's Plant Protection and Weed Management program entomologists and staff continued to work with the Maryland Department of Transportation's State Highway Administration (SHA) to conduct an integrated pest management (IPM) program aimed at providing biological control for certain targeted weed species on the SHA right of ways. In 2017, weed integrated pest management research and demonstration activities were conducted on the SHA right of ways, using funding from the SHA and the USDA Animal and Plant Health Inspection Service's (APHIS) Plant Protection and Quarantine (PPQ) program. The department's weed management program and biological control research and demonstration projects have been conducted over the past 19 years under current program management, and have involved cooperation with the SHA, the Howard County Department of Recreation and Parks, the Maryland National Capitol Park and Planning Commission, the Maryland Department of Natural Resources, USDA Agricultural Research Service (ARS), USDA APHIS, the U.S. Forest Service, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, and, in certain cases, private Maryland businesses and landowners.

Currently, the department is focused on biological control of mile-a-minute weed, *Persicaria perfoliata*, and purple loosestrife, *Lythrum salicaria*, using very specific insect biological control agents. Beginning in July 2017, the department entered into a new two-year agreement with the Landscape Operations Division of the SHA to administer a program to continue biological control driven suppression of mile-a-minute weed, and to reinstate a program aimed at suppression of purple loosestrife on state highway right of ways. These programs include lab, greenhouse rearing, and field release and monitoring of the weevil, *Rhinoncomimus latipes*, and field release and monitoring of the leaf beetle, *Galerucella (Neogalerucella)*. Funding for rearing, release, and monitoring of the weevil and purchase, release, and monitoring of the leaf beetle is provided in part by the SHA. An additional source of funds for this project comes from a cooperative agreement with USDA APHIS PPQ that has been renewed on an annual basis.

In 2017, the insect rearing lab staff reared 11,489 weevils. A total of 10,007 adult weevils were released at 20 sites statewide, 10 of which were new locations. The department

reared 7,007 of the adult weevils released. Release numbers were supplemented by an additional 3,000 weevils acquired from the New Jersey Department of Agriculture's Phillip Alampi Beneficial Insects Laboratory.

The rearing program also involves greenhouse growing of the host plant, *Persicaria perfoliata*, a mile-a-minute weed. The host plants are grown in the department's greenhouse in Annapolis. In 2017, nearly 2,000 *Persicaria perfoliata* plants were grown. *Rhinoncomimus latipes* has now been released by department staff and is established in portions of the following counties: Allegany, Anne Arundel, Baltimore, Carroll, Cecil, Charles, Frederick, Garrett, Harford, Howard, Kent, Montgomery, Prince George's, Queen Anne's, Somerset, Washington, and Wicomico. The biocontrol program benefited from an increased SHA budget and acquired a new growth chamber for continued production and storage of *Rhinoncomimus latipes*. This new piece of equipment can mitigate production issues by allowing climate-controlled storage of weevils.

NOXIOUS WEED MANAGEMENT

The purpose of this program is the control and eradication of designated noxious weeds in order to reduce their economic and aesthetic impact on farmers and landowners. Noxious weeds (Johnsongrass, shattercane, thistles) cause losses in excess of \$25 million annually to Maryland agriculture due to reduced yields, quality of crops and forages, and increased control costs. Increased expenses are also incurred for roadside and non-crop property management.

The Noxious Weed Law has a provision that the Maryland Department of Agriculture may enter into cooperative agreements with county or political subdivisions to provide management, technical assistance, training, and education for implementing noxious weed control programs. The county weed control programs are supervised by state personnel as specified by these cooperative agreements.

In the 15 participating counties, a Weed Control Advisory Committee, with representatives from farming organizations, government agencies, local farmers, and property owners, provides guidance for the program in that county. A county weed control coordinator is employed to determine infestations within the county, inspect uncontrolled infestations, provide information on appropriate control practices, and initiate control agreements with landowners to implement control.

In 2017, noxious weed advisory notices were sent to 337 managers of property infested with noxious weeds. Generally,

these notices were effective in obtaining compliance. When notifications are unsuccessful, the department may take legal action.

The weed control program also responds to citizens' requests for technical assistance in controlling invasive, difficult to control, persistent weeds such as *Phragmites*, multiflora rose, kudzu, and Callery pear trees. In addition, the weed control program also monitors giant hogweed, a federal noxious weed, that was first detected in Maryland in 2003. It exists on sites in Baltimore, Harford, and Garrett counties. In 2017, six sites were treated – two in Baltimore County, two in Garrett County, and two in Harford County. County weed control programs provided spray crews and materials to treat these giant hogweed infestations. Eradication is a multi-year effort and the weed control program will treat infestations at the expense of the landowner.

The weed control staff partnered with the Maryland Department of Natural Resources (DNR) for the sixteenth year in providing a *Phragmites* Management Program. Upon request from landowners or managers, program staff supplies technical and spraying assistance for control. The DNR provided 100 percent of the herbicides applied in the nine Eastern Shore counties for spraying *Phragmites*.

OTHER ACTIVITIES

During FY 2018, the Plant Protection & Weed Management staff continued to administer basic and specialist examinations for the Maryland Certified Professional Horticultural program. The program was developed by the Maryland Nursery, Landscape, and Greenhouse Association (MNLGA) to raise and improve the professional standards of Maryland's nursery, landscape, and garden center industry by giving special recognition to individuals who have shown a high level of attainment, and allowing them to be recognized by the gardening public. The program has also expanded to high school programs that specialize in horticultural curriculum, approximately 70 Maryland high school students participated in the exam in 2017.

The Plant Protection and Weed Management program is involved in the Invasive Plant Advisory Committee. This committee is mandated by law to develop a list of invasive plants using a tiered system. The law focuses on the nursery industry. Currently, there are six Tier 1 plants which cannot be sold in Maryland, and eleven Tier 2 plants that may be sold, but are required to have an invasive plant warning sign.

The department's staff developed regulations on the most recent update to the industrial hemp law. These regulations were later withdrawn as the program awaited a more comprehensive industrial hemp law.

PLANT PROTECTION AND WEED MANAGEMENT SUMMARY OF ACTIVITIES: CY 2015 – 2017

Activity	CY 2015	CY 2016	CY 2017
Beekeepers Registered	1,895	2,017	2,180
Honeybee Colonies Registered	14,594	15,550	15,630
Honeybee Colonies Inspected	2,224	2,095	3,011
Ginseng Dealers Registered	19	18	11
Ginseng Collectors Licensed	247	209	175
Nurseries Certified	315	311	299
Plant Dealers and Brokers Licensed	1,315	1,434	1,446
Phytosanitary Certificates Issued	247	326	176
Plant Pest Surveys # Target Pests	52	52	36
Plant Pest Surveys # Samples Processed	2,906	3,107	5,594
Target Pests Detected	9	6	13
Number of Noxious Weed Advisory Notices Issued	361	318	337

** Because of the seasonal nature of this program and calendar year federal reporting requirements, data are reported on a calendar year basis.*

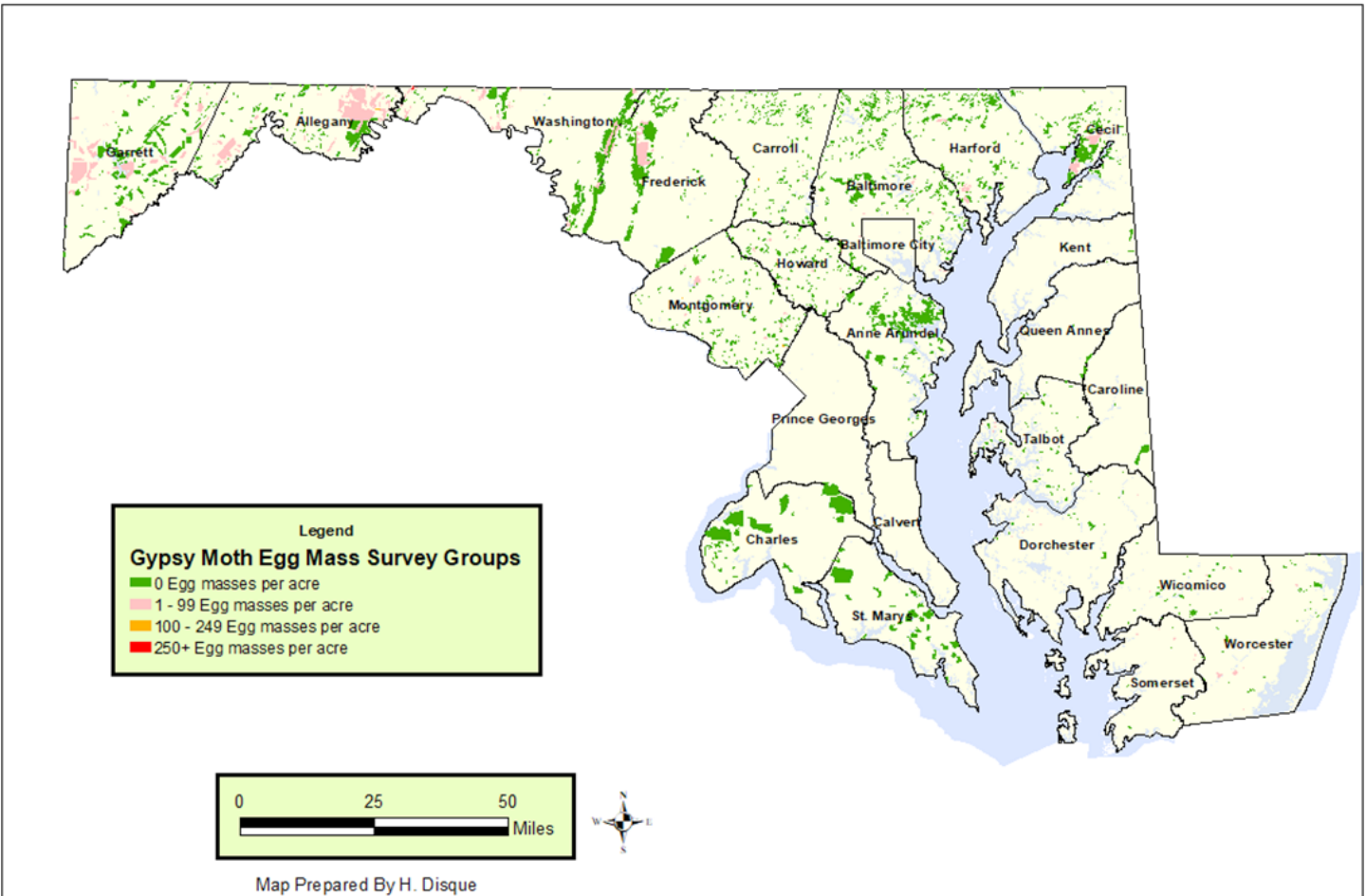
FOREST PEST MANAGEMENT

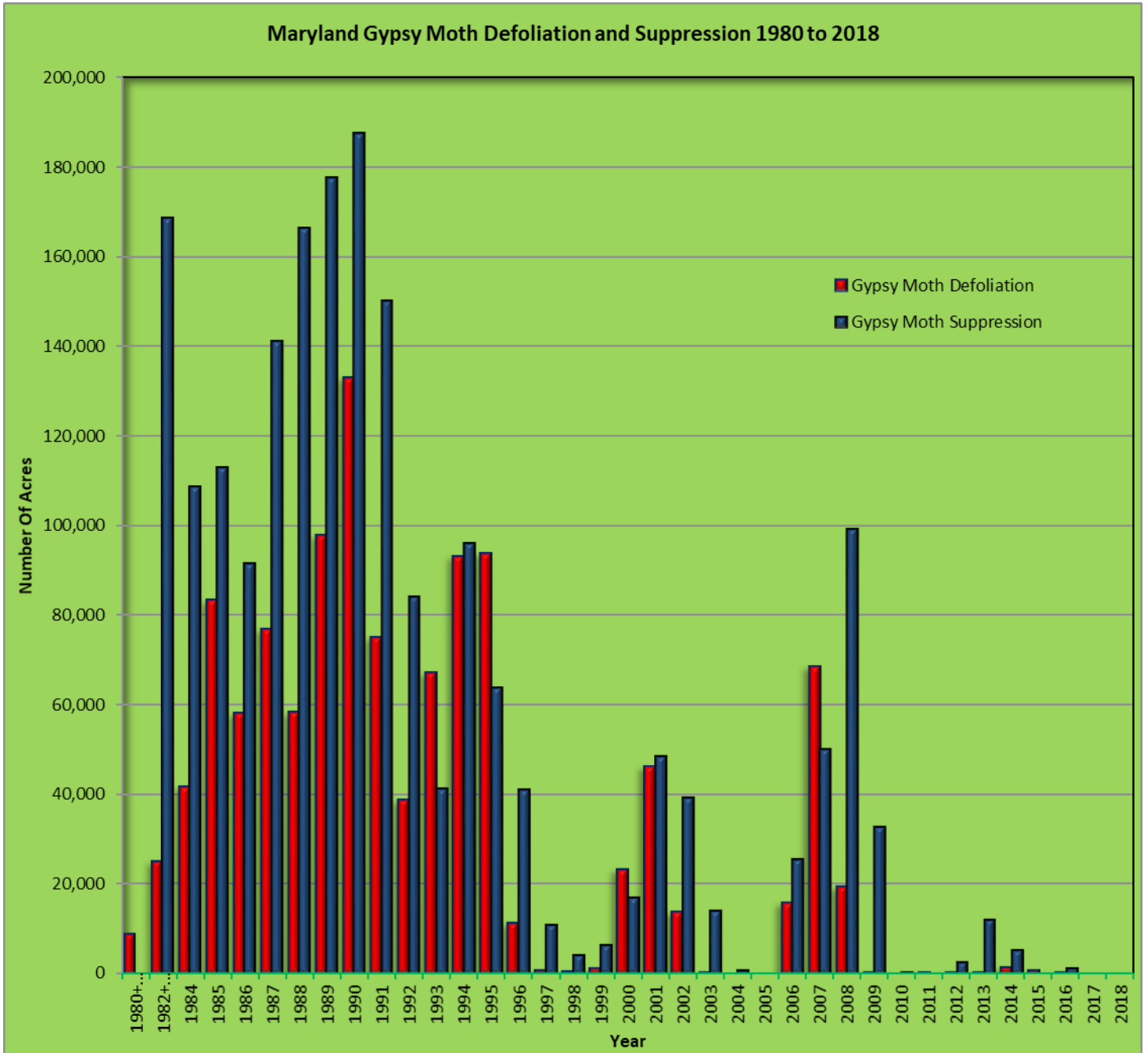
FOREST PEST MONITORING AND SURVEYING

Gypsy Moth. The gypsy moth is the most serious threat to oak forests in the United States. The first eggs were detected in Maryland in 1971 and the first extensive defoliation occurred in 1981. Each fall and winter, the department conducts an extensive survey for gypsy moth egg masses to determine potential areas of defoliation. From August 2017 through March 2018, the department's Forest Pest Management personnel conducted gypsy moth egg mass surveys on 481,829 acres of "high value" forested lands.

"High value" forested sites include areas with development, recreational use, managed forest and wildlife resources and other site conditions that render dieback and mortality to be economically and socially important. The survey results indicated that the current populations were insufficient to cause moderate to heavy defoliation on high value rural and urban forest in 2018. Western Washington County recorded areas with high populations of gypsy moth. Gypsy moth defoliation was minimal this year.

Maryland Department of Agriculture 2017- 2018 Maryland Gypsy Moth Survey Results Forest Pest Management Section





Maryland Department of Agriculture
2017 - 2018 Maryland Gypsy Moth Egg Mass Survey Summary
Forest Pest Management

County	Total	Private & County	State	# Positive	% Positive	# Blocks	# Acres	% Positive 2016-2017
EASTERN SHORE								
Caroline	42	0	42	0	0.0	6	4,233	0
Dorchester	118	80	38	12	10.2	34	3,119	5.9
Queen Anne's	18	0	18	0	0.0	7	442	0
Somerset	48	48	0	9	18.8	45	4,199	13.5
Talbot	190	186	4	5	2.6	64	5,786	3.6
Wicomico	166	160	6	9	5.4	51	4,671	8.7
Worcester	145	105	40	13	9.0	44	4,166	8.8
TOTALS	727	579	148	48	6.6	251	26,615	6.7
SOUTHERN								
Charles	186	154	32	0	0.0	35	44,037	13.2
St Marys	193	182	11	0	0.0	26	24,550	8.8
Anne Arundel	374	371	3	0	0.0	79	35,597	9
Prince Georges	0	0	0	0	0.0	0	0	0
Calvert	0	0	0	0	0.0	0	0	0
TOTALS	753	707	46	0	0.0	140	104,184	10.1
NORTHEAST								
Baltimore	898	813	85	13	1.4	259	43,095	5.8
Cecil	459	373	86	4	0.9	103	28,598	3.3
Harford	530	499	31	8	1.5	146	26,424	1.2
Kent	10	0	10	0	0.0	3	807	0
Baltimore City	0	0	0	0	0.0	0	0	0
TOTALS	1,897	1,685	212	25	1.3	511	98,924	3.8
WESTERN								
Allegany	862	400	462	148	17.2	140	52,881	6.4
Garrett	1,010	600	410	61	6.0	152	71,294	5.5
Washington West	327	200	127	51	15.6	56	12,214	7.8
TOTALS	2,199	1,200	999	260	11.8	348	136,390	6.2
CENTRAL								
Carroll	430	405	25	6	1.4	187	14,852	0.7
Frederick	685	549	136	14	2.0	144	46,330	4.7
Howard	339	306	33	11	3.2	124	11,655	0
Montgomery	667	586	81	13	1.9	191	20,860	0
Washington East	391	289	102	5	1.3	77	24,155	5.2
TOTALS	2,512	2,135	377	49	2.0	723	117,852	2.4
TOTALS	8,088	6,306	1,782	382	4.7	1973	483,965	5

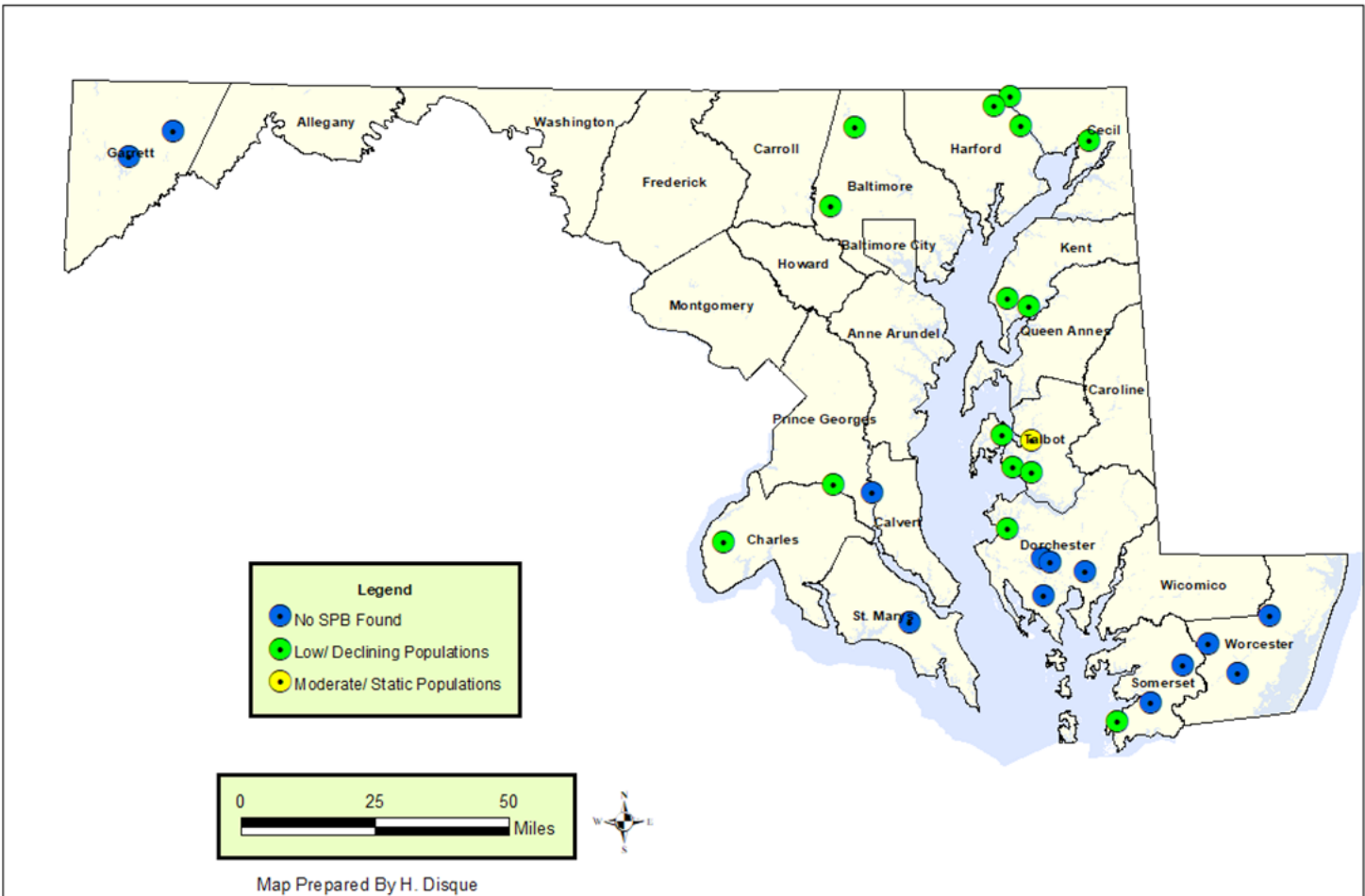
Southern Pine Beetle (SPB). The SPB is one of the most destructive insect pests of pines. Maryland is at the northern edge of its range and is commonly found on the Lower Eastern Shore and Southern Maryland. Since 1989, Maryland has participated in a multi-state SPB survey throughout the Southern United States using pheromone-baited traps.

Traps were set up in 13 counties across Maryland. Garrett, Baltimore, Cecil, and Harford counties were added into the survey in 2018. All traps collected low levels to no southern pine beetles, indicating that populations are to remain low in

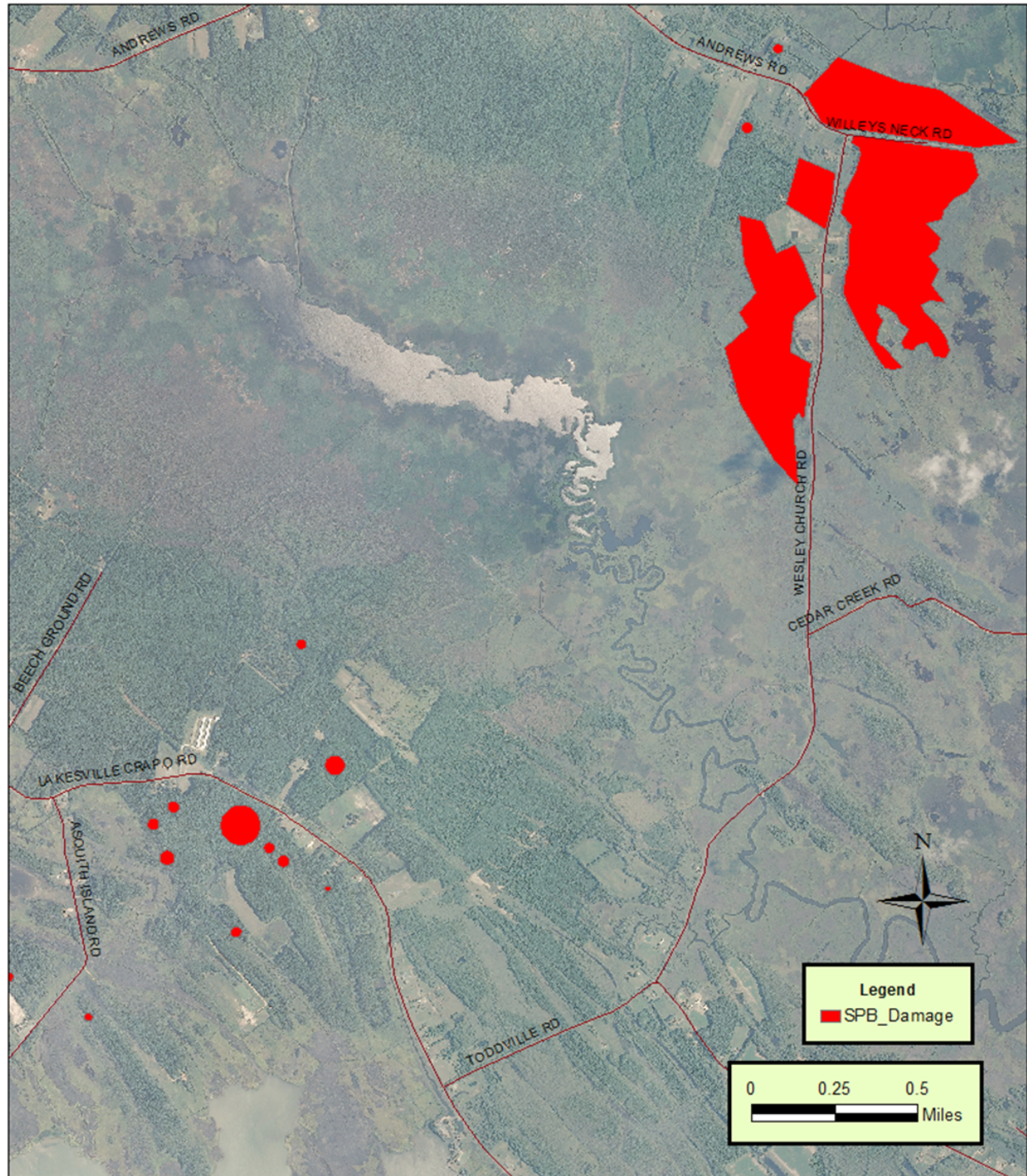
2018. The exception was in Talbot County where one trap saw increased SPB levels, however no tree damage or mortality was observed. The traps were set up shortly after the time of redbud bloom.

The Dorchester County area that had experienced a SPB outbreak in 2015-2016 saw no additional loss of trees in 2018. No southern pines beetles were found in traps nearby the infestation area. There are many loblolly pines in that area with chlorotic needles. The conclusion is that this is being caused by flooding and salt-water intrusion.

**Maryland Department of Agriculture
2018 Southern Pine Beetle Trap Results
Forest Pest Management Section**

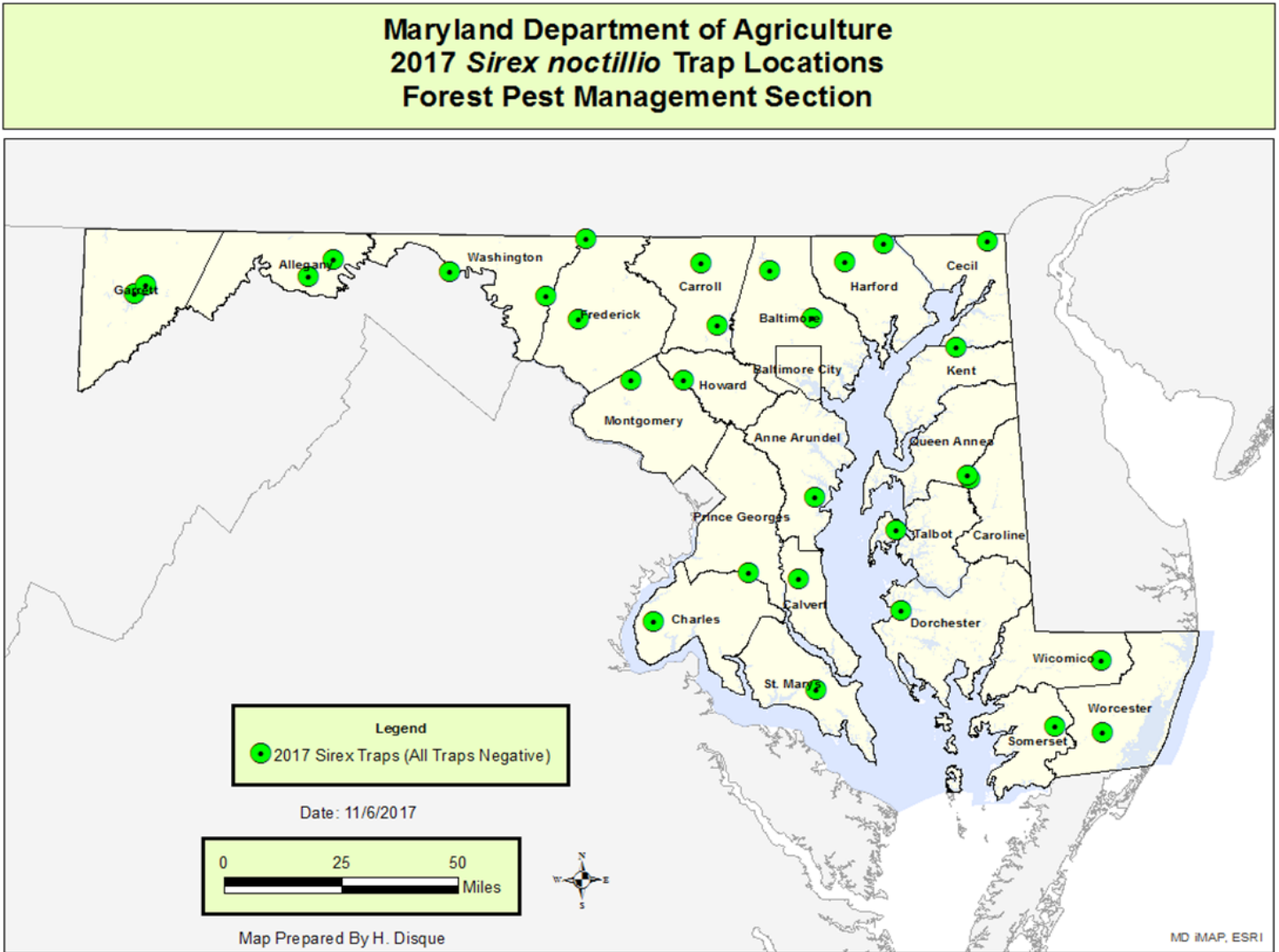


**Maryland Department of Agriculture
Forest Pest Management Section
Southern Pine Beetle Affected Area 2015-17
Dorchester County**



***Sirex noctillio* (Woodwasp).** The sirex woodwasp has been the most common species of exotic woodwasp detected at U.S. ports-of-entry associated with solid wood packing materials. Recent detections of this woodwasp outside of port areas in the United States have raised concerns because this insect has the potential to cause significant mortality of

pinus. The sirex woodwasp has not been detected in Maryland, but is known to be in Pennsylvania. To detect this insect, the department placed two traps per county on northern tier counties and one trap for all other counties, totaling 31 traps on pine woods. All traps were negative during Calendar Year 2017.

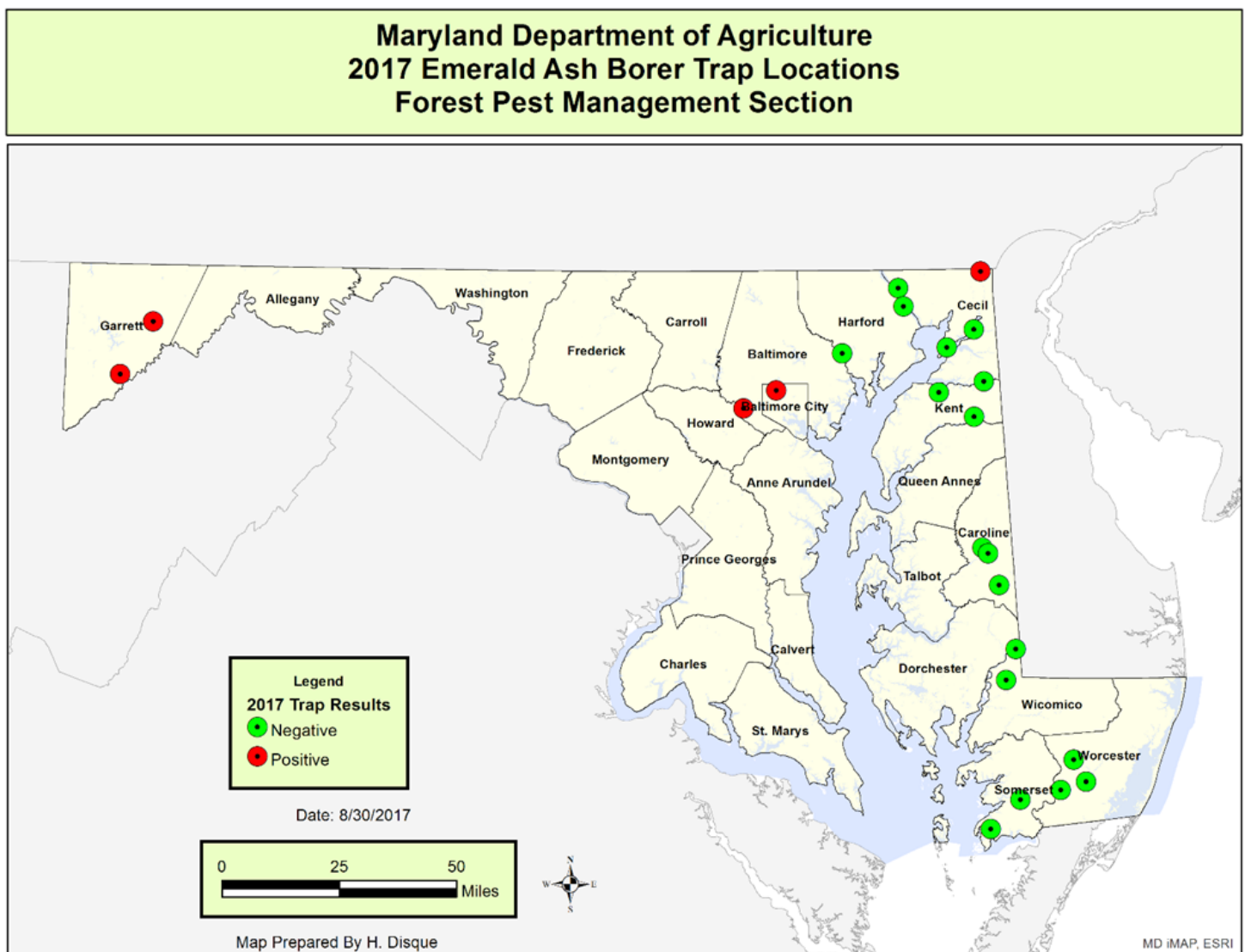


Emerald Ash Borer (EAB). The department’s Forest Pest Management program put up 23 green funnel traps in non-positive counties around the state and in the parasitoid release areas. EAB was found in Garrett and Baltimore counties as well as Baltimore City – all areas that had previously tested positive for EAB. EAB was also found in a trap in Cecil County – the first time EAB had been identified there.

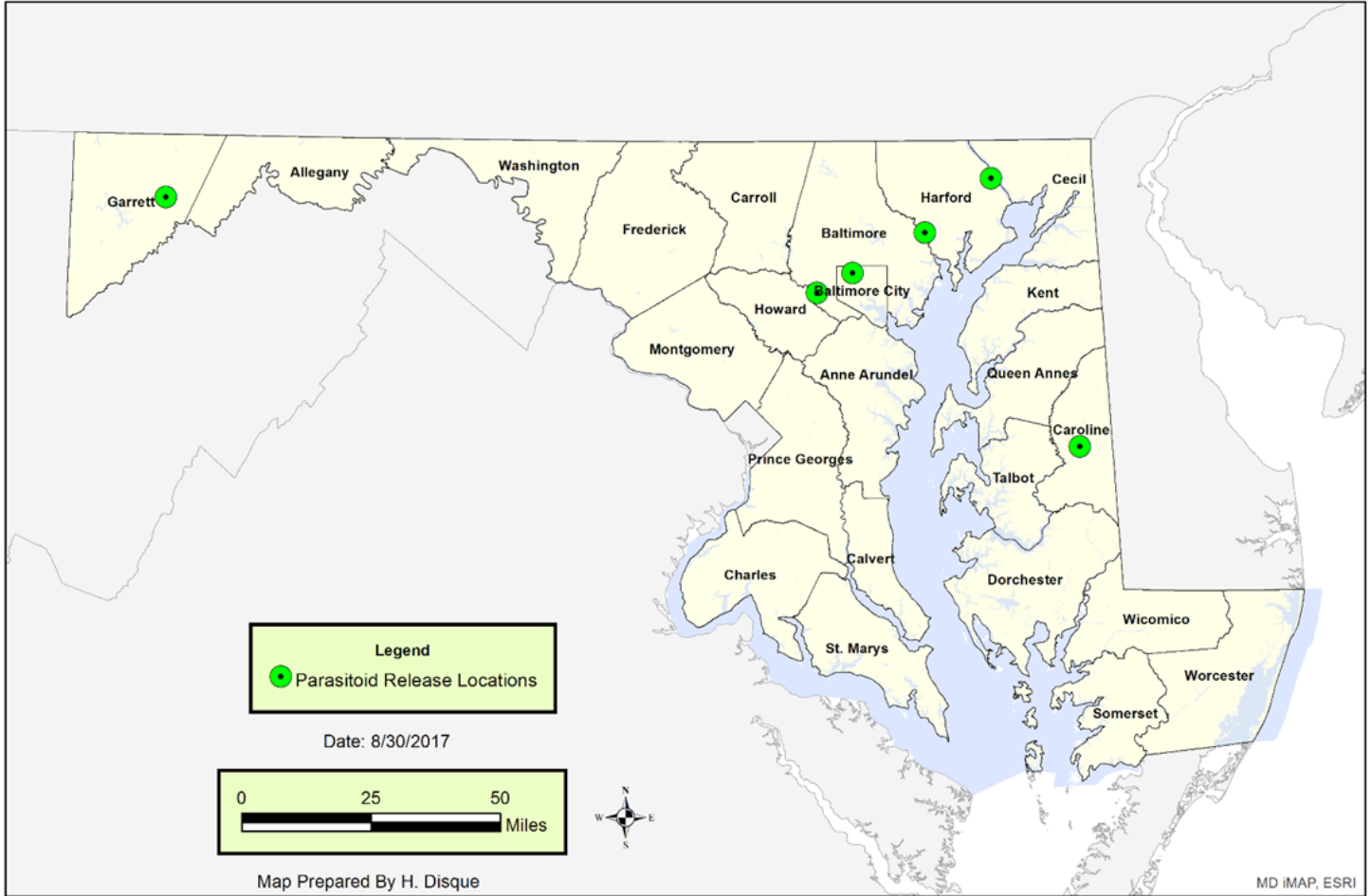
During the 2017 field season, the department’s Forest Pest Management program released 82,888 parasitoids of EAB. The parasitoids were released at six state park locations across Maryland, including Garrett, Harford, Baltimore, and Caroline counties along with Baltimore City. In 2017, the

department released 28,107 *Oobius agrili*, 48,363 *Tetrastichus planipennis*, and 6,418 *Spathius agrili* across these six sites. This work is part of the Integrated Pest Management for the EAB landscape grant.

In addition, Forest Pest Management personnel supervised treatments of ash trees around the state. This work was done at parks in cooperation with the Maryland Department of Natural Resources (DNR) and the Maryland Conservation Corps (MCC). In total 306 ash trees, 5,164” diameter at breast height (DBH), were treated using 34,262 ml of Tree-age (emamectin benzoate).

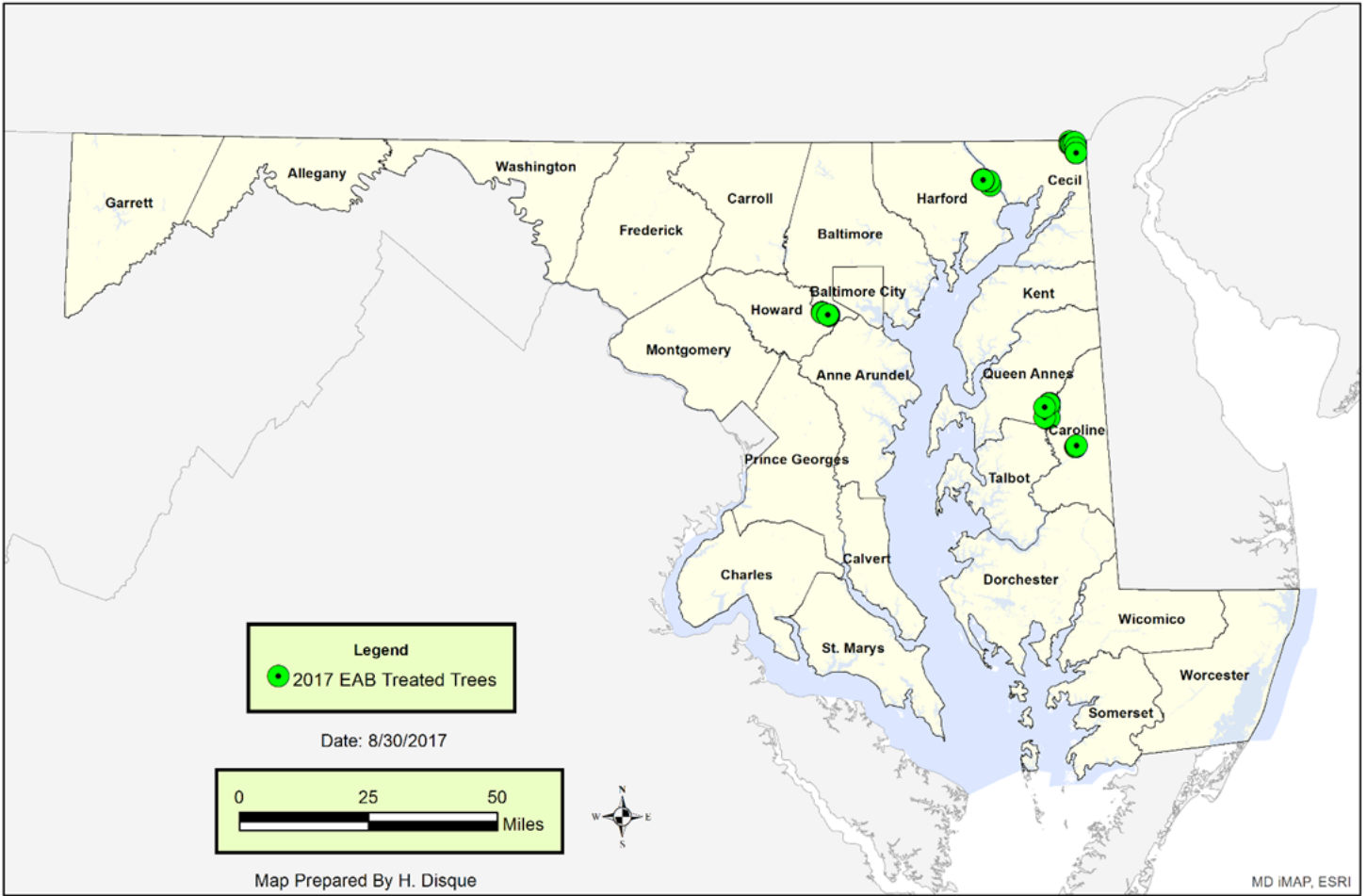


Maryland Department of Agriculture 2017 Emerald Ash Borer Parasitoid Locations Forest Pest Management Section



Maryland Department of Agriculture Forest Pest Management 2017 Emerald Ash Borer Parasitoid Release Summary													
Site Name	Latitude	Longitude	Oobius agrili (vials)		Oobius agrili (adults)		Tetrastichus planipennis		Tetrastichus planipennis Adults			Spathius agrili	
			# vials	Total	# cups	Total	# bolts	Total	# female	# male	Total	# cups	Total
Cylburn Arboretum	39.3513	-76.6537	37	3700	0	0	87	6804	0	0	0	20	883
Big Run State Park	39.5449	-79.1385	59	5900	2	125	159	9832	200	56	256	32	1186
Martinak State Park	38.86002	-75.8415	67	6700	4	420	175	12179	801	50	851	28	1160
Gunpowder Falls State Park	39.46263	-76.3924	35	3500	3	248	77	5692	195	84	279	30	1121
Susquehanna State Park	39.61383	-76.151	35	3500	2	314	72	5420	195	121	316	27	1163
Patapsco Valley State Park	39.29593	-76.7836	37	3700	0	0	86	6734	0	0	0	21	905
		Totals	270	27000	11	1107	656	46661	1391	311	1702	158	6418

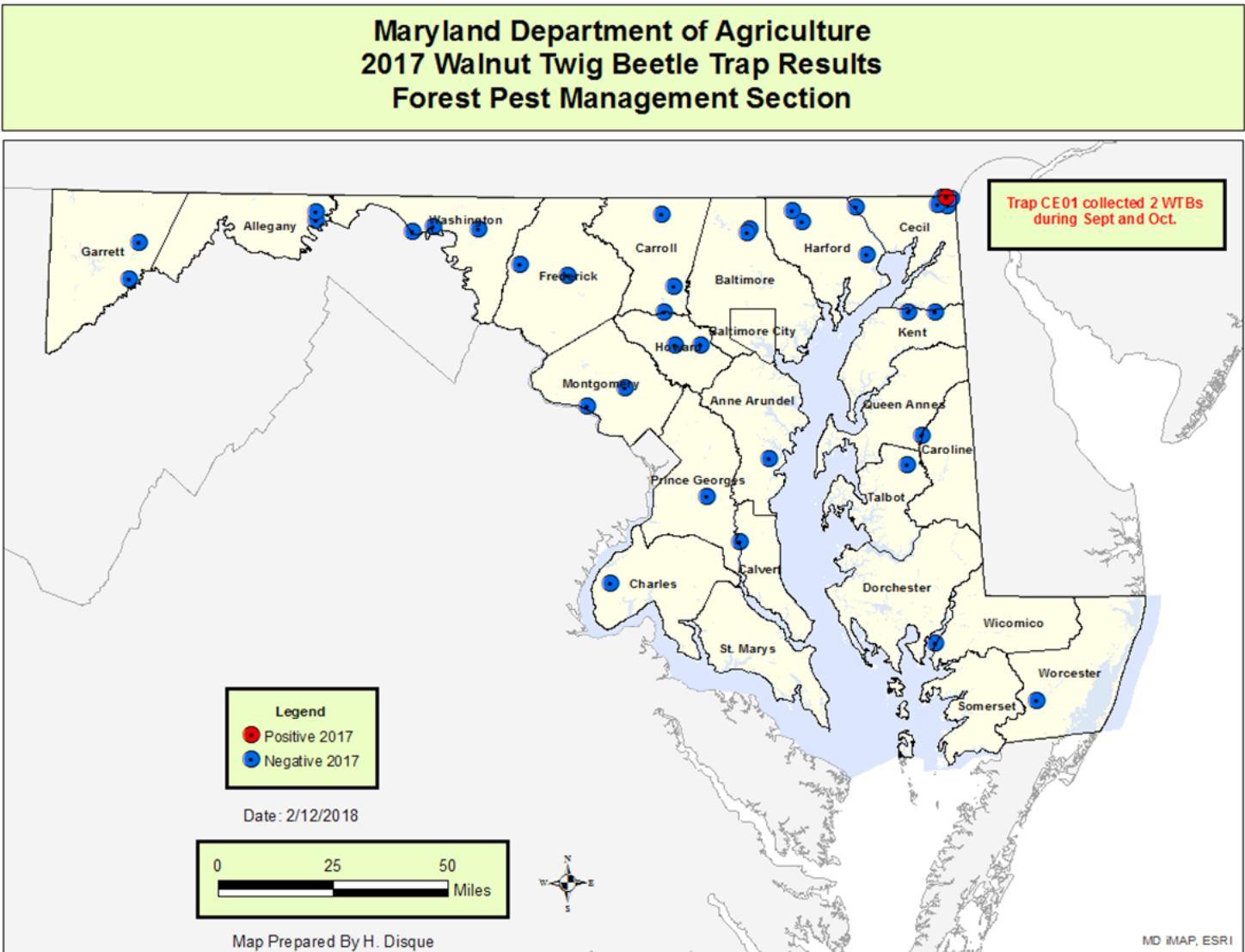
Maryland Department of Agriculture 2017 Emerald Ash Borer Treated Tree Locations Forest Pest Management Section with MD DNR & MD Conservation Corp



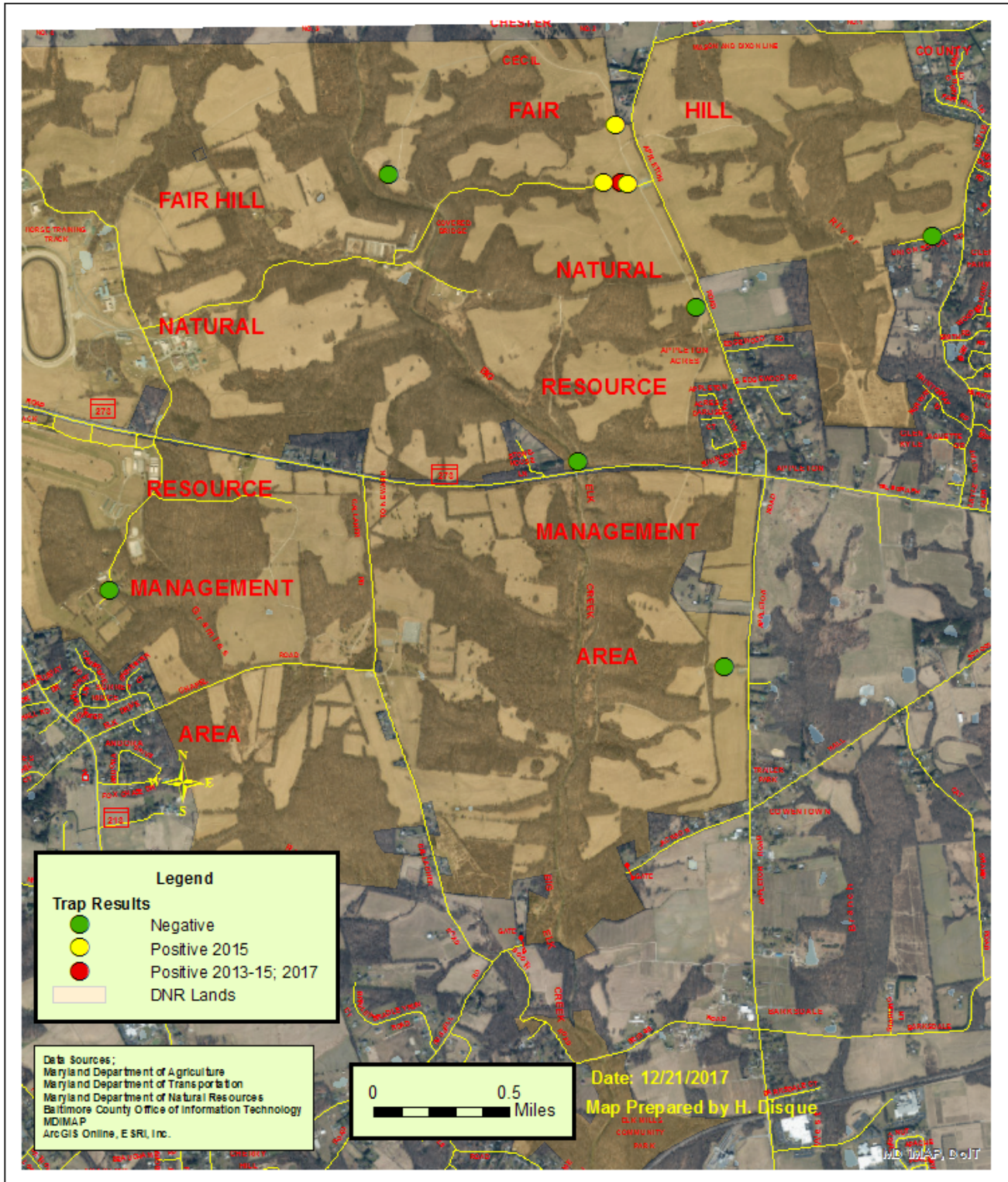
Thousand Canker Disease of Black Walnut and Walnut Twig Beetle. Thousand canker disease (TCD) was recognized in 2008 as a complex consisting of the walnut twig beetle, *Pityophthorus juglandis*, and the fungus *Geosmithia morbida*, and is blamed for widespread mortality of eastern black walnut planted in the western United States. It has since spread east and was first reported in the natural range of the eastern black walnut in 2010, when it was discovered in Tennessee. Since then, it has been found in seven eastern states. In 2011, Maryland along with several other mid-Atlantic states started surveying for this disease. The walnut twig beetle was first detected in Maryland in 2013 and by October 2014 TCD was confirmed. A quarantine order was issued by the Maryland Department of Agriculture in January 2015

to limit the spread of TCD. The quarantined area was in the northeastern corner of Cecil County.

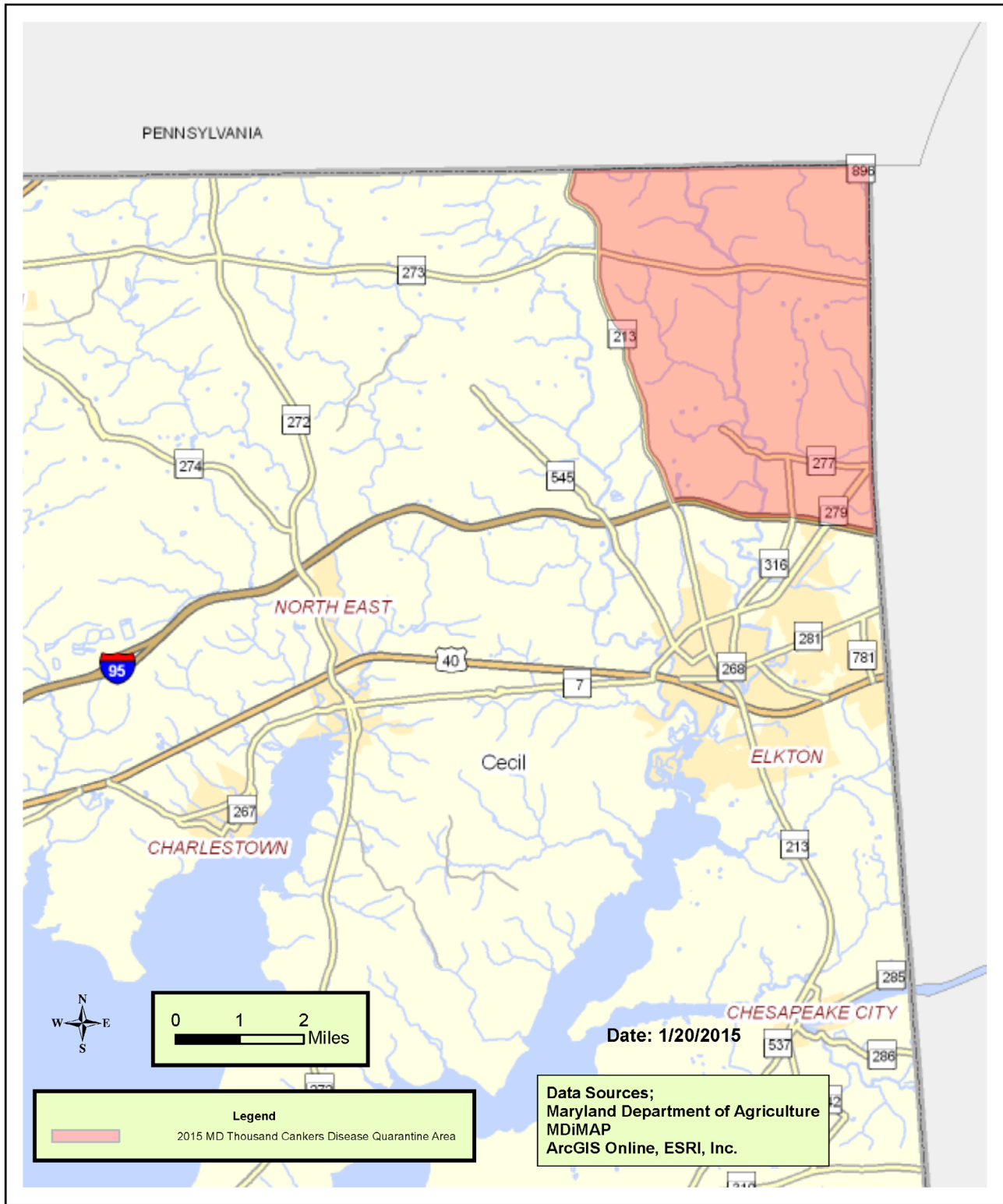
In 2017, 39 Lindgren Funnel Traps baited with the Walnut Twig Beetle (WTB) lure were set in 20 counties around the state. Eight traps were set in Cecil County in an effort to delimit the outbreak near the positive site discovered in 2013, and positive again in 2014, 2015, and 2017. Traps were checked bi-weekly and field samples were collected. Those samples were sorted and labeled in office, and then sent to the Pennsylvania Department of Agriculture for identification. The previously positive site, trap CE01, was the only positive trap and collected two beetles. Trees at the original positive site have not shown evidence of decline as of yet.



Maryland Department of Agriculture
 Forest Pest Management
 Walnut Twig Beetle Trap Results 2013-2017
 Cecil County, Maryland



Maryland Department of Agriculture Thousand Cankers Disease of Walnut Quarantine Area Cecil County, Maryland



Hemlock Woolly Adelgid Suppression. The Hemlock Woolly Adelgid (HWA) remains the major threat to the health of eastern hemlock. Infested hemlocks occur in the metropolitan area between Baltimore and Washington and in natural stands from Cecil to Garrett counties. In 2003 to 2004, a joint task force comprised of the department’s Forest Pest Management Section and Maryland Department of Natural Resources (DNR) experts addressed the multi-disciplinary needs of the HWA infestation. The task force prioritized more than 50 hemlock stands and selected them as the sites for joint suppression efforts (chemical and/or biocontrol). Only publicly owned or public use sites would be part of this suppression project.

Currently, the chemical option involves treating the hemlock trees with the insecticide imidacloprid by one of two methods – trunk injection or soil injection. The biocontrol option involves releasing HWA predators into the hemlock stands in an effort to reduce HWA populations.

A total of 10,440 hemlock trees, 111,469” diameter at breast height (DBH), were treated in Maryland between July 1, 2017 and June 30, 2018. Of this total, 1,632 trees or 16,183” DBH were trunk (stem) injected and 8,808 trees or 95,286” DBH were soil injected.

FALL 2017 – SPRING 2018 IMIDACLOPRID TREATMENTS FOR HEMLOCK WOOLLY ADELGID CONTROL IN MARYLAND

Hemlock Stand	County	Trunk Injection		Soil Injection		Total	
		#Trees	Inches DBH*	# Trees	Inches DBH	#Trees	Inches DBH*
Prettyboy Reservoir	Baltimore	0	0	444	5,229.3	444	5,229.3
Frederick Watershed	Frederick	436	2,872.3	1,002	6,066.2	1,438	8,938.5
Potomac Garrett S F	Garrett	0	0	972	9,857.7	972	9,857.7
Rocks S P	Harford	35	351.7	0	0	35	351.7
Hagerstown Watershed	Washington	0	0	93	822.6	93	822.6
Green Ridge S F	Allegany	0	0	145	2,342.1	145	2,342.1
Big Run S P	Garrett	168	1,838.4	454	6,793.2	622	8,631.6
Wolf Swamp SRSF **	Garrett	428	4,999	3,747	39,023.2	4,175	44,022.2
Savage River S F	Garrett	259	2,788.2	195	1,741.2	454	4,529.4
Cunningham Falls S P	Frederick	137	1,206.2	0	0	137	1,206.2
Pickering Creek	Talbot	55	611.1	0	0	55	611.1
South Mountain S P	Washington	6	44.1	0	0	6	44.1
Broad Creek Scout Camp	Harford	10	109.2	0	0	10	109.2
Deep Creek Lake S P	Garrett	54	813.9	1,697	22,717.1	1,751	23,531
Swallow Falls S P	Garrett	44	548.6	59	693.7	103	1,242.3
TOTAL		1,632	16,182.7	8,808	95,286.3	10,440	111,469

*DBH = the diameter of the tree trunk at 4.5 feet above the ground

** Treatments done by Forest Pest Management and Maryland Conservation Corps (Department of Natural Resources)

MARYLAND HEMLOCK WOOLLY ADELGID PREDATOR RELEASES 2003 – 2017

Hemlock Stand	County	<i>Laricobius nigrinus</i>	<i>Laricobius osakensis</i>	<i>Scymnus coniferarum</i>	<i>Scymnus sinuanodulus</i>	<i>Sasajiscymnus tsugae</i>
Rocky Gap S P	Allegany	3,476	0	105	0	5,000
Prettyboy Reservoir	Baltimore	2,672	0	0	0	0
Cunningham Falls S P	Frederick	810	0	0	0	0
Frederick City Watershed	Frederick	2,893	0	0	945	0
Broad Creek Scout Camp	Harford	2,702	0	0	0	15,410
Rocks S P	Harford	1,924	0	0	0	0
Hagerstown Watershed	Washington	853	0	0	0	0
Big Run (Savage River S F)	Garrett	1,685	0	0	0	0
Big Run S P	Garrett	50	0	0	0	0
Dry Run (Savage River S F)	Garrett	150	0	0	0	0
Frostburg Watershed	Garrett	300	0	0	0	0
Laurel Run (Potomac S F)	Garrett	1,174	0	0	0	0
Lostland Run (Potomac S F)	Garrett	1,500	500	0	0	0
Poplar Lick (Savage River S F)	Garrett	2,289	1,510	0	0	0
Elk Lick (Savage River S F)	Garrett	1,691	500	0	0	0
Gunpowder Falls S P	Baltimore	0	1,010	0	0	0
TOTAL		24,169	3,520	105	945	20,410

Hemlock Woolly Adelgid Predator Releases. Over 51,800 predators have been released in Maryland since 1999. In 2017, 1,786 *Laricobius nigrinus* were released at sites in Harford, Frederick, and Garrett counties.

Hemlock Woolly Adelgid Suppression Efficacy Surveys. Treatment efficacy surveys have been conducted annually since 2006. Treated trees averaged a 79 percent reduction in Hemlock Woolly Adelgid (HWA) populations when measured one-year post treatment and non-treated trees averaged a 24 percent increase in HWA populations when measured over the same period. From 2017 to 2018, efficacy surveys were done at treatment sites in Garrett, Frederick, Washington, and Allegany counties.

Bacterial Leaf Scorch. In 2017, Bacterial Leaf Scorch (BLS) was prevalent throughout the state. BLS was observed on ornamental trees and throughout the state's forested areas. BLS was more severe this year than in 2016.

Exotic Asian Defoliator Survey. A comprehensive exotic Asian defoliator survey was proposed and funded through the Farm Bill for 2017. This survey increases the likelihood that this harmful invader can be detected early and that an appropriate eradication response can be mounted to protect Maryland's forest industry. One of the high-risk areas targeted is the Chesapeake Bay, as it is a major thoroughfare for ships coming into the Port of Baltimore. An increase in the size of ships and ship traffic coming to Baltimore has increased the

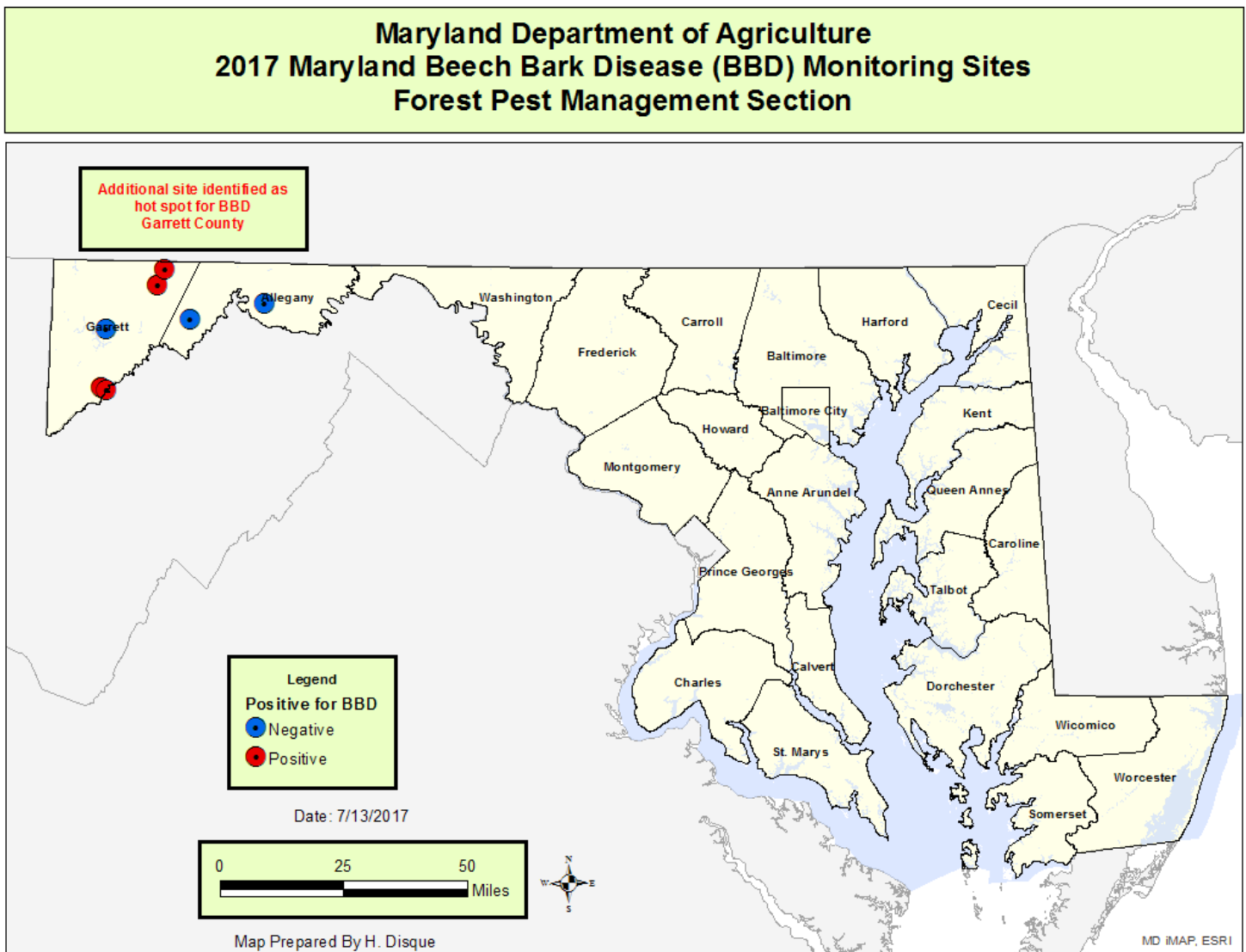
risk of an accidental introduction of exotic Asian defoliators. Seven moths were chosen to survey based on their biological characteristics that enable them to become successful invaders, for their habitat preference, and prior intelligence that suggests an increased risk of introduction.

The department’s Forest Pest Management program deployed traps at 12 locations statewide to determine the presence or absence of Asian defoliator moths. At each location five traps were set up to survey for the seven species of moths. Traps ran from June to September 2017 and were checked bi-weekly. Forests composed of oak, willow, sweet gum, poplar, beech, pine, and other host trees and shrubs were surveyed. To date, only three traps have been positive for gypsy moths. The European and Asian gypsy moths are difficult

to morphologically separate, so the specimens were sent to the USDA’s Otis laboratory for genetic testing and species determination.

Beech Bark Disease. Beech Bark Disease (BBD) has been found in Allegany and Garrett counties. There is 154,473 acres of infested forest in Garrett County.

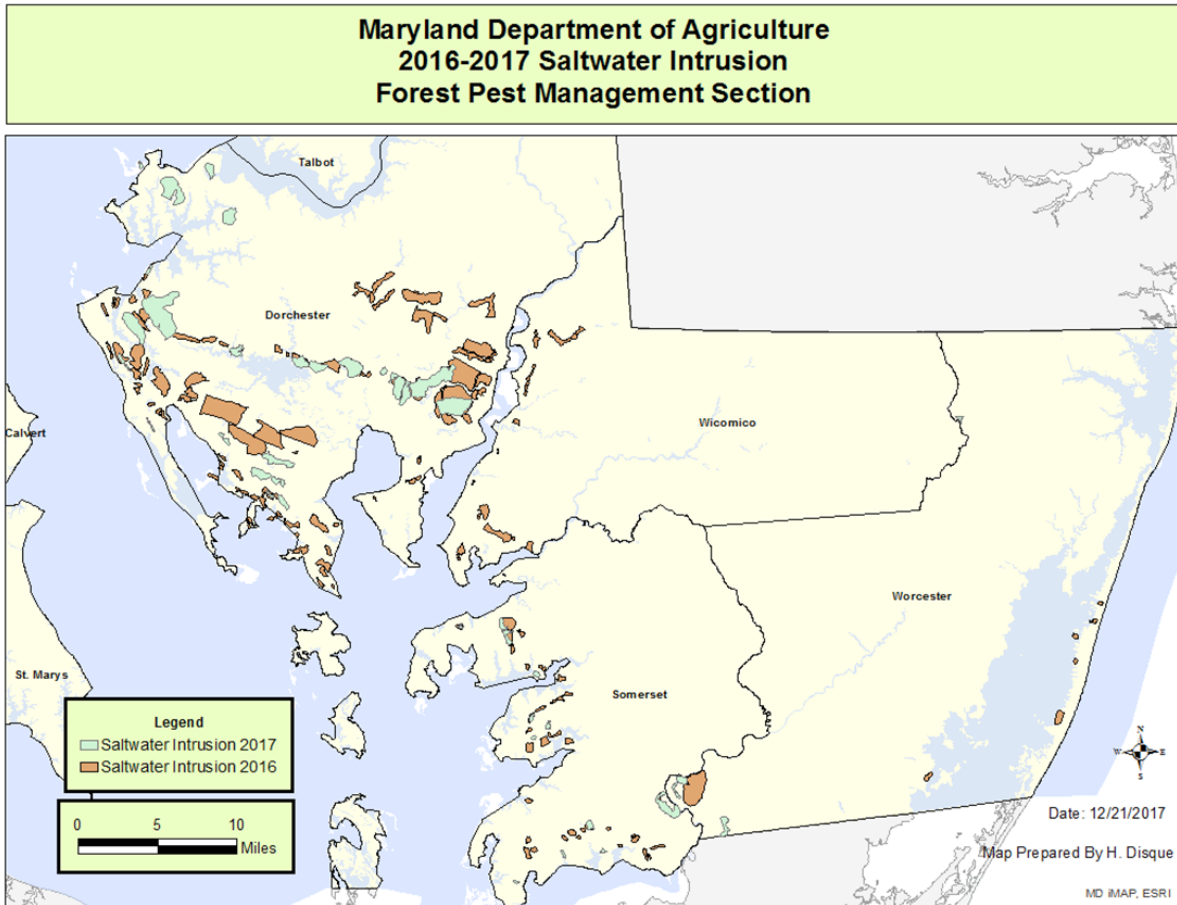
In 2013, four permanent BBD monitoring sites were set up. Dan’s Mountain tested positive for BBD in 2017, making it the first positive site for BBD in Allegany County. A new hot spot for BBD was identified in March 2017. This area is approximately 20 acres and is in northern Garrett County. BBD is now very evident and trees are in decline.



Saltwater Intrusion. In July 2017, a saltwater intrusion delineation flight was flown across the Lower Eastern Shore. This flight mirrored the flight taken in 2016 in order to determine the areas affected by saltwater intrusion and to map changes.

In total, 13,096 acres of forest were found to be affected by

saltwater intrusion. The majority of the acres affected were in Dorchester County, but Somerset, Worcester, and Wicomico counties were also affected. This is in contrast to 2016 when 50,406 acres were found to be affected by saltwater intrusion. About 98 percent of the mapped forests were either very severely or severely affected by saltwater intrusion.



MDA Forest Pest Management Saltwater Intrusion Flight Summary – Damage Agent

Damage Agent	Acres Affected
Saltwater Intrusion	13,096
Variable Oak Leaf Caterpillar	1,753
Unknown	493
Total	15,342

MDA Forest Pest Management Saltwater Intrusion Flight Summary – Percent of Forest Affected

Percent of Forest Affected	Acres
Very light (1-3%)	0
Light (4-10%)	0
Moderate (11-29%)	273
Severe (30-50%)	6,233
Very Severe (>50%)	6,589
Total	13,096

FOREST PEST DAMAGE

Gypsy Moth – 5 acres defoliated

Variable Oakleaf Caterpillar – 5,700 acres defoliated

Ash Rust – 2,500 acres defoliated

Areas surrounding the Nanticoke and Choptank Rivers saw extensive leaf disfigurement and defoliation due to ash rust.

Mature Chestnut and Red Oaks are dying in Maryland's most northern counties and one county on the Eastern Shore. Secondary pests are present, but likely not the cause of mortality. U.S. Forest Service pathologists have tested trees and the results were first found to be inconclusive.

After a second test, Carroll County tested positive for oak wilt. A database of oak mortality is being developed to determine if environmental factors are contributing to decline.

MOSQUITO CONTROL

The department's Mosquito Control program provides an important public health and quality of life service to Maryland residents in 1,977 communities in 16 counties through mosquito abatement work, arbovirus surveillance, public education, and enforcement.

The program is staffed by 13 classified employees, eight long-term contractual employees, and 75 seasonal contractual employees. The program's administration, laboratory, and the Anne Arundel County program staff are all located at the department's headquarters in Annapolis. Regional offices and laboratories are located in College Park, Hollywood, and Salisbury.

The work of Mosquito Control is conducted under the authority of the Maryland Mosquito Control Law, Agricultural Article, Title 5, Subtitle 4. Participation in the Mosquito Control program is voluntary and requires cooperative agreements with local governments and local communities to pay for services.

MOSQUITO-BORNE DISEASE SURVEILLANCE

West Nile virus (WNV). WNV continues to be the mosquito-borne disease of greatest public health importance in Maryland. In 2017, six human cases were reported by the Maryland Department of Health (MDH). In addition to these human cases, nine pools of mosquitoes tested positive for WNV.

Eastern Equine Encephalitis (EEE). EEE, one of the most severe mosquito-borne diseases in the United States, was not detected in any mosquito pools in 2017. No human cases were reported. EEE has an average mortality rate of 33 percent and most survivors experience significant brain damage.

Zika virus. Zika virus seems to be taking on less importance

as a disease of concern. This virus was the mosquito-borne disease of most concern in 2016. There was a large outbreak of zika virus in the American tropics, which was first reported in the winter of 2015 into 2016. Much of the concern was based on the fact that zika infections can cause severe birth defects in developing fetuses. The state of Maryland quickly developed a plan for combating this virus in the event that a person came into Maryland infected with the virus after having traveled to the tropics. The Mosquito Control program responded to three travel-related cases of zika virus infection in the summer of 2017, which was down significantly from the previous year. In Maryland, no zika infections were transmitted by local mosquitoes. Maryland residents that travel to the tropics should still be concerned about zika virus and other mosquito-borne infections.

PERMANENT WORK PROJECTS

The Kubota Excavator, which went into service in 2012, is still our primary unit used for ditching and water management projects. At this time, we do mostly land-based ditching projects because of the many restrictions placed on open marsh water management. The total area managed by source reduction projects in Calendar Year 2017 was 205 acres. In cooperation with the Commissioners of Somerset County, several projects are ongoing. Most of the ditching is done in the fall, winter, and spring when mosquito control crews are not busy with other projects. Ditch maintenance projects involved the removal of silt, debris, and vegetation from the outlets of these systems to allow floodwater to flow thus eliminating mosquito breeding habitat.

Mosquito Control continued its annual inspections of the Crisfield City Dike system. Mapping is ongoing. The program mapped areas in need of future repairs. In addition to the excavator, the department also used an all-terrain Argo ATV

for personnel and equipment transport to remote areas of this system.

Follow-up inspections indicate that the repairs are successful. The department will continue to monitor this tidal dike system to ensure the repairs are still functional in reducing residential flooding as well as reducing mosquito breeding habitat in the Crisfield community

BIOLOGICAL CONTROL

In the effort to control mosquitoes, the department uses several approaches as part of its Integrated Pest Management (IPM) program. One component of this program is the use of the native mosquitofish, *Gambusia affinis holbrooki*, to control mosquito larvae. Incorporating this biological control agent reduces the use of aquatic insecticides and provides control of mosquito populations in an efficient, cost-effective, and environmentally responsible manner.

The mosquitofish used in the Mosquito Control program are reared in a facility at the Salisbury Regional Office. From there, the fish are transported and stocked into suitable habitats such as storm water management facilities, closed ditches, or artificial containment sites. These areas are inspected by department personnel to determine if the introduction of the mosquitofish would be the preferred control option based on habitat type/site design, water quality factors, the presence of threatened or endangered species, and the relative abundance of mosquito larvae.

During the 2017 mosquito season, 1,300 fish were stocked in closed pond and woodland habitats. The use of these fish is down for a couple reasons. One, most areas that are suitable for fish have already been stocked. Second, more scrutiny is taking place with regard to areas that are suitable for fish release. The department will continue to monitor and inspect suitable sites to determine where future mosquitofish stocking is necessary.

PUBLIC EDUCATION

Our public education efforts this season are split between media, school, professional associations, and general presentations. There were 12 interviews done this season by mosquito control or communications employees with both print and TV media outlets throughout the state.

Outreach was done at 17 different school functions in 2017. In Prince George's County, mosquito control employees judged science fairs and acted as judges for the county's science quiz show, The Science Bowl. Staff also did presentations for three

university classes – two for Salisbury University and one for Somerset Community College. Mosquito control employees spoke at 11 community meetings – six in Prince George's County and five in St Mary's County. The program hosted two large workshops on mosquito biology, ecology, and control for local health department personnel and the public in response to Zika and West Nile virus. Mosquito Control also staffed a one-day event at the Maryland State Fair that focused on the program.

Many reach of these public education efforts are impossible to quantify, particularly the media interviews. However, over 2,300 people attended the events with known participant levels. Public education continues to be an important part of our Mosquito Control program, particularly with the continuing problems created by the introduction and spread of the Asian tiger mosquito, the reoccurring WNV problems, and other imported diseases of concern like Zika virus.

AERIAL SPRAY

The aerial spray program continues to provide a high-level of service to the state. The department owns and operates a Beechcraft King Air, which has been modified specifically to be operated in a modern Mosquito Control program. The pilot is also the administrator for the aerial spray program.

The aerial spray season began in April 2017 with applications of biorational larvicide to 4,550.64 acres of seasonally flooded woodlands. This work is done near population centers to reduce the number of mosquitoes that fly into these areas. The early woodland mosquito species are also involved in the amplification of arboviruses in bird populations. Controlling these species helps to reduce the risk of transmission of arboviruses to horses and humans later in the season.

In 2017, 126,138.64 acres were treated by aircraft, the majority for control of adult mosquitoes. Precision navigation and flow control equipment are critical for the safe and efficient aerial application of insecticides. The Mosquito Control program uses Ag-Nav Guia, a state of the art GPS based navigation system, for all aerial applications of insecticide. This system, functioning with insecticide metering equipment, assures target accuracy and disperses insecticides accurately within a tenth of an ounce per acre. With spatial and temporal parameters and calibrated application rates, mosquito mortality rates of 90 percent or more are achieved within a defined target area at a cost that is lower than spraying with truck-mounted spray equipment.

MOSQUITO CONTROL ACTIVITY SUMMARY: CY 2015 – 2017

ACTIVITY	CY 2015	CY 2016	CY 2017
Communities Participating in Mosquito Control Program	2,204	2,150	1,977
Number of Light Trap Nights	2,511	2,223	2,675
Percent of Light Trap Nights Below Threshold	63.4%	64.01%	61.53%
Number of Landing Rate Counts Performed	29,247	19,430	17,070
Percent of Landing Rate Counts Below Action Threshold	25.2%	35.05%	20.03%
Number of Public Service Requests	4,952	4,679	4,400
Number of Inspections by Request	1,173	681	925
Number of Adverse Effects Inspections	377	301	141
Number of Mosquitofish Stocked	3,650	5,050	1,300
Acres Managed by Open Marsh Water Management	884	200	205
Acres Treated with Insecticide	1,396,520.96	1,741,794.42	1,322,042.4
Acres Treated for Mosquito Larvae	5,991.39	5,322.9	26,628.92
Acres Treated for Adult Mosquitoes	1,390,529.57	1,428,790.72	1,295,413.48
Acres Treated by Aircraft	119,206	156,480	126,138.64
Acres Treated by Ground Equipment	1,277,323.96	1,585,314.42	1,196,141.76
Number of Mosquitoes Tested for Arboviruses	19,243	17,470.00	18,140
Number of Human Cases of West Nile Virus Statewide	46	6	5
Number of Cases of Arbovirus in Domestic Animals	2	0	11
Number of Mosquito Pools Positive for Arbovirus	33	6	9*

*West Nile Virus Positive Mosquito Pools: Prince George's County: 9

PESTICIDE REGULATION

The Pesticide Regulation Section (PRS) is responsible for regulating the use, sale, storage, and disposal of pesticides. The primary functions of the section are to enforce state and federal pesticide use laws and regulations and to ensure that pesticides are applied properly by competent individuals so that potential adverse effects to human health and the environment are prevented. The PRS contains five major programs: Pesticide Applicator Certification and Training; Pesticide Use Inspection and Enforcement; Pesticide Technical Information Collection and Dissemination; Integrated Pest Management in Schools and on School Grounds; and Special Programs.

PESTICIDE APPLICATOR CERTIFICATION AND TRAINING

Two types of pesticide applicators are certified by the PRS – private and commercial. Private applicators are farmers and other individuals applying restricted-use pesticides to their own land or rented land for the purpose of producing agricultural commodities. Commercial applicators apply general use and restricted-use pesticides as employees of licensed pest control businesses, not-for-hire businesses, or public agencies.

A total of 146 new private applicators were certified in Fiscal Year 2018 for a three-year period after passing a closed book examination administered by section personnel. In FY 2018, 1,301 private applicators renewed their certificates by attending recertification meetings. There were 799 private applicators whose certificates expired on December 31, 2018. Section staff approved and monitored 178 private applicator recertification sessions conducted by the department, the University of Maryland Extension, or the pesticide industry.

In FY 2018, 342 new commercial pest control applicators and consultants were certified in one or more of the 13 categories of pest control by satisfying minimum experience of education requirements and by passing a written certification examination. The section certified 984 public agency applicators in FY 2018.

This brings the total number of commercial, public agency applicators, and consultants to 4,100 for FY 2018. There were 18 exam sessions held in FY 2018, during which 2,255 exams were administered to 836 applicants. Certified commercial applicators are required to participate in at least one department-approved training session each year in order to

renew their certificate. In FY 2018, 497 recertification training sessions for commercial pesticide applicators were approved and monitored by the PRS, and were conducted by the pesticide industry, the University of Maryland Extension, or the department. There were 5,678 applicators recertified in FY 2018.

During FY 2018, the section licensed 1,362 commercial businesses and 122 not-for-hire businesses to apply pesticides and to perform pest control services. There were 298 public agency permits issued to government agencies that apply pesticides. Forty pest control consultant licenses were issued. In FY 2018, 7,656 registered employee identification cards were issued. These employees of pesticide businesses and public agencies are registered to apply pesticides under the supervision of certified applicators. Additionally, 146 dealer permits were issued to businesses that sell restricted-use pesticides.

PESTICIDE USE INSPECTION AND ENFORCEMENT

In addition to enforcing state pesticide laws, the department enforces federal pesticide laws under a Cooperative Enforcement Agreement with the U.S. Environmental Protection Agency (EPA). Routine inspection activities are conducted throughout the year and include pesticide use observations and inspections of pest control businesses, public agencies, pesticide dealers, market places, and producer establishments. Consumer complaints and pesticide misuse investigations are also conducted by Pesticide Regulation Section inspectors. In FY 2018, 765 routine business inspections were performed. Of the inspections conducted, 271 violations were cited. In addition, two Civil Penalties were issued to two pest control businesses.

PESTICIDE TECHNICAL INFORMATION COLLECTION AND DISSEMINATION

A list of pesticide sensitive individuals was first compiled in 1989. During FY 2018, the department registered 145 individuals. These individuals receive advance notification of pesticide applications made to adjacent properties by commercial ornamental plants and turf, pest control businesses, and public agencies.

A searchable database of registered pesticide products, licensed pesticide businesses, commercial and private applicators, and restricted-use pesticide dealers continue to be posted on the department's website. This database provides

information to applicators and the public about pesticides that may be legally sold, distributed, and used in Maryland, as well as the names and addresses of licensed pesticide businesses. Pesticide dealers can check the certification status of pesticide applicators prior to selling them restricted-use pesticides. This database is linked to the EPA's registration database so that applicators and consumers can obtain information on each pesticide product queried, including the EPA registration number, intended use, sites of application, formulation, active ingredients, and the brand name.

INTEGRATED PEST MANAGEMENT IN SCHOOLS

The section continues to promote and support implementation of the Integrated Pest Management (IPM) Programs in public schools. Regulation that requires schools to develop and implement notification and IPM plans for indoor pest control became effective in 1999, and regulations for notification and IPM plans for school grounds became effective in 2002. Staff provided technical assistance in the development of the plans and distribution of information on potential adverse effects of pesticides applied. The Pesticide

Regulation Section staff continues to work with Maryland public school districts on implementation of IPM on school property.

TRAINING EVENTS

During FY 2018, the Pesticide Regulation Section's Program Manager, Enforcement Coordinator, and inspectors attended the EPA Region 3 Pesticide Inspector's Workshop held in Carroll Valley, Pennsylvania. The agenda for this meeting included health and safety information regarding pesticides and respirator fit tests.

The section still maintains a Pesticide Sensitive Crop Locator Map. This application shows locations of crops that are sensitive to pesticide damage so that pesticide applicators can avoid these areas while spraying pesticides on nearby properties. The map was developed to help strengthen agricultural diversity. Information contained in the statewide map is voluntarily provided by the grower of the sensitive crop. There are 154 sensitive crops registered for the program.

STATE CHEMIST

The State Chemist Section regulates the sale and distribution of pesticides, feeds, pet foods, fertilizers, compost, soil conditioners, and agricultural liming materials in order to enhance and promote agricultural production, protect consumers and the environment from unsafe products, ensure the sale of effective products, and provide the regulated industry with a competitive marketplace. Regulation is accomplished by product registration, laboratory analysis, inspection, and voluntary compliance and enforcement actions such as stop sale orders. The section is totally special fund supported.

REGISTRATION OF PRODUCTS

Pesticide products, commercial feeds, fertilizers, fertilizer/pesticides, liming materials, and soil conditioners are registered for sale or distribution only after careful review of the label to determine the material's nature, proposed uses, and potential adverse impacts on agriculture, the environment, the general public, and the regulated industry. During Calendar Year 2018, the section registered: 11,152 pesticide products, 2,479 fertilizers, 409 soil conditioners, 339 fertilizer/pesticide combination products, 48 liming

materials, and 6,769 commercial feeds. Department inspectors also brought 313 previously unregistered products into compliance. Please see Table 1.

INSPECTION

Field inspectors routinely sample randomly selected products at retail outlets, distribution centers, warehouses, and formulating facilities. These inspections enable the department to maintain efficient regulatory control that ensures the sale, distribution, and use of effective products that are safe for the consumer and environment when used in accordance with approved label instructions. The inspectors sample a representative cross section of products for chemical analysis and obtain reliable data on the distribution, formulation, and sale of these commodities. This enables the section to stop the sale or distribution of ineffective products or those that are harmful to humans, animals, or the environment because of unacceptable levels of pesticides, presence of pathogens, plant nutrients, trace elements, and/or toxic materials. In Calendar Year 2018, the State Chemist Section inspectors performed 1,100 on-site inspections. Please see Table 2.

STATE CHEMIST SECTION ONLINE REGISTRATION PORTAL

The Department of Information Technology, NIC, and the State Chemist Section, developed a new online platform for the registration of pesticides and animal feeds. Initial planning meetings started in July of 2016 and culminated in the pesticide renewals going live for the 2018 registration year. Approximately 63 percent of pesticides were registered through the NIC portal. There are still some registrants that cannot renew online. The next commodity type for online renewal was animal feeds. Animal feed posed a significant problem for online renewals. The online renewal percentage was approximately 46 percent. The system, both what our registrants use and internally for department workflow, are constantly being improved for better efficiency and ease of use. The remaining commodities will be put in the pipeline when the majority of bugs in both systems are worked out. The program is hoping for a 75 percent renewal rate online. Tonnage reporting and inspection fee payment will be the last to migrate to the online portal.

ENFORCEMENT

Any regulated product determined to be ineffective, misbranded, or deleterious to the public, agriculture, or the environment is removed from the marketplace. Determination for product removal is based on inspection; laboratory analysis of official samples; information received from federal or state regulatory agencies; products offered for sale but not registered for use or distribution in Maryland; and review of labels or other materials submitted by companies to support product registration. Please see Table 3.

LABORATORY ANALYSES/INVESTIGATIONS

The department's state-of-the-science laboratory is staffed with chemists and technicians who have expertise and experience in the use of highly sophisticated, computer-controlled instruments, which are used to analyze agricultural chemicals and toxic contaminants in commercial products, crops, and environmental samples (water, soil, fish, etc.) The laboratory staff provides reliable scientific data that is used to assist farmers and to initiate or support regulatory actions against products that are violative or violators of state and federal agricultural and environmental laws. The laboratory also provides support to the Maryland Department of the Environment, the Maryland Department of Natural Resources, the U. S. Department of Agriculture, and the U. S. Environmental Protection Agency. Please see Table 4.

RAW MILK PET FOOD

Raw milk for pet food is an up and coming market in the state of Maryland. The program has seen an increase in the number of registrations for this commodity. The department will start an inspectional program for the commodity where samples will be taken, labels checked for proper formatting and information, and laboratory analysis will be conducted on the samples taken. The laboratory analysis will include, but not be limited to, microbial contamination, determination of pasteurization, antibiotics, pesticides, etc. These analyses will help to ensure a healthy and safe pet milk supply for the state. Currently, the program has 18 registrants, and two more in the process of registering their products.

HOMELAND SECURITY

Ammonium Nitrate - Potential Explosive for Terrorist Activities. The department inspects fertilizer manufacturers and warehouses twice a year to determine how much ammonium nitrate is being stored and to monitor sales and distribution records to ensure they are maintained in accordance with federal and state law.

Food Emergency Response Network for Chemistry.

The State Chemist Section's laboratory is the primary Food Emergency Response Network chemistry laboratory for Maryland. It is an essential part of a national federal-state-local jurisdictional network of laboratories that are expected to be in a state of readiness for immediate response to a chemical event, whether terrorist or accidental, on human and animal food supplies. In the event of an incident, the laboratory staff provides rapid and accurate analysis of food, feed, crops, and water samples to determine if these items that provide points of entry into the food chain should be embargoed or released as safe. The laboratory is an active participant in the proficiency program for the analysis of highly toxic materials in food and water. Since 2005 the laboratory has participated in 25 check sample rounds involving highly toxic materials, four of which are among the most deadly toxins known. The laboratory successfully identified the toxic materials in the check samples. The toxins and chemicals include heavy metals, ricin, alpha amanatin, melamine, mycotoxins, heavy metals, tetramine, cyanide, sodium fluoroacetate, alkaloid toxins, and pesticides.

The laboratory has been called upon to analyze samples for the U.S. Food and Drug Administration (FDA) Baltimore-District Office as an overflow-capacity laboratory. It maintains preparedness by participating in proficiency testing, validating the network methods in the laboratory, and extending the methods to animal feeds and pet foods.

HUMAN AND ANIMAL HEALTH ACTIVITIES

Pathogen Screening Laboratory. Both the U.S. Food and Drug Administration (FDA) and the Maryland Department of Agriculture are concerned about the presence of various pathogenic organisms in dog and cat food. The FDA has indicated that between June 2017 and August 2018, ten pet food manufacturers were required to remove products from the market place due to the presence of Salmonella and Listeria pathogens. These pathogens most likely were associated with raw meat, eggs, and poultry that may have become contaminated during the manufacturing of the commercial product.

Pathogens may be transmitted to households via contamination by handling and preparation of pet food in the home kitchen area used both for human and pet food preparation. Contamination may also result from opening a bag of pet food whereby small particles of pet food become airborne and adhere to kitchen counter top surfaces and improper cleaning of the same kitchen utensils to prepare both human and pet food. The pathogen contaminated pet food may be in bowls or plates placed in a pet feeding area easily accessible to young children.

In Calendar Year 2018, department scientists and technicians routinely screened 133 pet food products collected by the inspection staff from warehouses, distributors, and retail outlets. Products found to contain pathogens will be subject to removal from the marketplace via Stop Sale Orders and recalls. The three principle pathogens of concern at this time are Salmonella sp., Listeria sp., and E. coli. Screening procedures will be those used by federal regulatory agencies based on DNA identification, bioluminescence, and other established techniques.

Mycotoxins and Environmental Toxins Contamination in Grains and Animal Feeds. The department routinely monitors Maryland-produced and imported grain products (i.e. livestock and human use), animal feed ingredients, and finished animal feeds for certain mold secondary metabolites (mycotoxins) known as aflatoxins, fumonisins, ochratoxin, zearelenone, and vomitoxin.

The laboratory analyzed finished feeds as part of the State Chemist Section's FDA Contract. Samples analyzed were finished feeds. Results from analysis indicated that the overall mycotoxin contamination was low, as seen by no violations being detected.

Metals in Animal Feeds. An analysis program was initiated for finished feeds as part of the section's FDA contract.

Twenty animal feeds were analyzed for the following metals: aluminum, arsenic, beryllium, cadmium, chromium, mercury, nickel, antimony, selenium, tellurium, thallium, uranium, vanadium, and zinc. None of the metals analyzed, either nutritive nor toxic, were over regulatory limits.

Bovine Spongiform Encephalopathy – BSE or Mad Cow Disease. The department continued an inspection program in conjunction with the FDA that began in 1999 to determine if feed mills, retail and wholesale distributors, haulers, and grain storage facilities within Maryland comply with federal regulations pertaining to the prevention of Mad Cow Disease. Feed mills and/or feed distributors are issued stop sale orders for products determined to be in non-compliance with state and federal regulations. In FY 2018, the section inspected and collected samples from feed mills, various retail and wholesale distributors, grain haulers/storage facilities, and pet food manufacturers. All inspected facilities complied with federal regulations.

The section uses multiplex polymerase chain reaction (PCR) instead of the regular PCR analysis done in the past. The multiplex method allows for the simultaneous determination of DNA from swine, sheep/goats, and cattle. This saves the section time in doing the analysis. All samples analyzed were negative for ruminant DNA indicating there was no prohibited material in the animal feed or feed ingredient.

U.S. Department of Agriculture (USDA) Pesticide Data Program. Since 1997, the USDA has contracted with the department to sample various food items from principal distribution centers in the state. These samples consist of diverse items such as pineapples, potatoes, processed food, processed fruit juices, produce, milk, and peanut butter, which are analyzed by federal and state laboratories for several hundred different pesticides. In concert with the U.S. Environmental Protection Agency (EPA) Food Safety Program, the data will be used to establish new pesticide food tolerances with added emphasis on the diet of infants and children.

ENVIRONMENT

Maryland Bee Pollen Survey. In conjunction with the University of Maryland's Honey Bee Lab, headed by Dennis vanEngelsdorp, Ph.D., the State Chemist Section has been supporting the lab through the analysis of pesticides in bee pollen. The Honey Bee Lab at the University of Maryland has diverse personnel with multidisciplinary scientific backgrounds. Research in the laboratory is focused on an epidemiological approach to honeybee health.

Major mechanisms that are responsible for reoccurring high loss levels in honeybee populations include pests and pathogens associated with honeybees, loss of natural forage habitat due to large monocultural croplands, and pressure from human induced changes in the environment.

The lab is a major partner and founding member of the Bee Informed Partnership (BIP), who collaborates closely with beekeepers from across the country to study and better understand the loss in honeybee colonies in the United States. Through the BIP, the largest and most comprehensive honeybee survey in the world was conducted. The data that is compiled through the BIP survey is then utilized to conduct research to better improve Integrated Pest Management (IPM) practices for beekeepers.

The State Chemist Section has provided laboratory support for the determination of approximately 198 pesticides in bee pollen samples. The bee pollen samples are gathered from sentinel hives and from apiary colonies. The data submitted to the Honey Bee Lab becomes part of the National Honey Bee Survey and is used to help improve IPM practices for beekeepers and to improve colony health. The State Chemist Section has been analyzing samples for the past three years.

Protection of the Chesapeake Bay – Fertilizer Restrictions.

The State Chemist's registration staff carefully reviews and approves the labels of all fertilizers intended for use on lawns/turf and golf courses. The purpose is to ensure that the directions for use comply with the 2011 Fertilizer Use Act, which specifies phosphorous monitoring, nitrogen application limits, and removing applied fertilizer from paved surfaces.

Nearly all lawn fertilizers containing phosphorus require soil testing prior to application. With regards to nitrogen, application limits are set at 0.7 pounds per 1,000 square feet for rapidly available nitrogen, or 0.9 pound of nitrogen per 1,000 square feet of which at least 20 percent must be slow release. State Chemist inspectors perform surveillance of retail outlets to ensure that lawn/turf products are in compliance and will issue stop sale orders for those that are not. Lawn fertilizer labels without the restriction language may lead to over-application, which then may increase nutrient runoff due to erosion, driveway run-off, etc. Additionally, the law requires the registrants and manufacturers of the products to annually submit the amount of these products sold and distributed specifically as fertilizer for lawns, turf, golf courses, nurseries, etc. The purpose of this is to monitor the increase or reduction of these fertilizer products and the corresponding nutrients from year to year.

Compost Facility Operator Certification. The Maryland Commercial Compost Regulation requires a department-certified facility operator to be onsite to oversee the compost manufacturing process. Before becoming certified, an individual must pass an examination. Fifteen people passed the exam during Calendar Year 2018. Since 2010, 90 people have taken the exam and have become certified. Additionally, individuals passing the exam must maintain their certification by attending training courses approved by the Maryland State Chemist as well as participating in facility inspections conducted by State Chemist inspectors. Three individuals were recertified during Calendar Year 2018. Since 2010, 15 people have met the qualifications for recertification.

TABLE 1—CY 2018: REGISTRATION AND ENFORCEMENT

Registration	
Pesticides	11,152
Fertilizers	2,479
Soil Conditioners	409
Fertilizer/Pesticide Mixtures	339
Liming Materials	48
Feeds	6,769
Total	21,196
Companies with Registered Products	1,941
Registrants	1,458
Enforcement - Non Registered Notices Brought Into Compliance	
Pesticides	6
Fertilizers	8
Soil Conditioners	3
Fertilizer/Pesticide Mixtures	6
Liming Materials	1
Feeds	180
Total	204
Enforcement - Non Registered Stop Sales	
Pesticides	6
Fertilizers	8
Soil Conditioners	3
Fertilizer/Pesticide Mixtures	6
Liming Materials	1
Feeds	180
Total	204

TABLE 2—CY 2018: INSPECTIONS

Product Manufacturing Sites Visited [Plants, Warehouses, Retailers]	1,100
FDA Regulation Ruminant Tissue [BSE] Feed Inspections	20
FDA cGMP Inspections	5
USDA/MDA Pesticide Data Program Sites Visited	266
USDA/MDA Pesticide Data Program Samples Collected	510

TABLE 3—CY 2018: REGULATORY ACTIONS

Regulatory Action Stop Sales	
Active Ingredient Deficiencies	
Pesticides	22
Fertilizers	52
Feeds	32
Active Ingredient Over Formulations	
Pesticides	32
Fertilizers	31
Feeds	18
Mycotoxins in Feeds	0
Label Violations	10
Phosphorus Levels in Turf/Lawn Fertilizers	15
Regulatory Action Warnings	
Active Ingredient Deficiencies	
Pesticides	30
Fertilizers	12
Feeds	22
Active Ingredient Over Formulations	
Pesticides	0
Fertilizers	18
Feeds	7
Mycotoxins in Feeds	0

TABLE 4—CY 2018: LABORATORY ANALYSES PERFORMED

	Samples Collected	Number of Analyses
Pesticides	231	277
Fertilizers	311	859
Liming Materials	81	170
Feeds and Pet Foods	326	1,030
Feed – Microbiology	133	399
Broiler Feeds for Phytase	52	52
Livestock Feeds – Drugs, Additives, Mineral Supplements, Ingredients	76	832
Toxic Metal Screen	47	385
Maryland Bee Pollen Survey	55	10,890
EPA (Pesticide Regulation – Maryland)	140	15,026
FDA Contract – Prohibited Material	20	60
FDA Contract – Heavy Metal Screen	20	480
FDA Contract – Mycotoxin Screen	20	100
FDA Contract – Salmonella sp.	5	5
Food Emergency Response Network of Federal & State Laboratories	16	16

TABLE 5—CY 2018: PRODUCT SALES IN TONS

Fertilizers	338,603
Fertilizer/Pesticide Mixtures	9,019
Soil Conditioners	224,988
Liming Materials	161,467
Total	734,077

TURF AND SEED

Seed is the single most important input to any agricultural system. To be successful, a grower must begin with quality seed. The department's Turf and Seed Section conducts regulatory and service programs, including seed and field inspections, testing, certification, and quality control services which are designed to ensure the continued availability of high quality seed to Maryland's seed consumers. Today's seed industry exists in an environment of rapid change. The continued development of biotechnology and the expansion of genetically modified organisms has had an enormous effect on the production, distribution and marketing of seed, and upon state seed programs. Seed regulatory, testing, and certification programs throughout the country are being challenged to meet the demands brought about by these changes in seed technology.

SEED LABORATORY

The Maryland Department of Agriculture's (MDA) seed testing laboratory supports regulatory, certification, supervised seed mixing, and turfgrass activities. It also provides service testing for seed producers, dealers, farmers, and other seed consumers. Turfgrass professionals depend upon the laboratory to test the purity, germination, and noxious weed seed of lots destined for use on golf courses, sod production fields, public grounds, and other areas demanding high quality turf. Commercial vegetable growers use the laboratory for specialized vigor and germination testing, particularly for peas, garden beans, and lima beans. The State Highway Administration relies upon the laboratory to test all grass, wildflower, shrub, and other seed planted along Maryland's highways. Maryland farmers participating in the Maryland Agricultural Water Quality Cost-Share (MACS) Cover Crop Program use the laboratory to ensure that the seed they plant meets the quality standards required for that program. The laboratory also identifies seed submitted by farmers, veterinarians, health officials, other government agencies, and the general public. The laboratory conducts Round-up® Ready testing of seeds for authorized seed producers to assist with their quality control programs. The laboratory also tests seeds used on wetland mitigation, restoration, and conservation projects. Key to a successful laboratory operation is a well-trained staff. The Association of Official Seed Analysts (AOSA) maintains an accreditation program for seed analysts in official laboratories throughout the United States. Analysts who pass rigorous tests, which include both written and practical examinations, are certified as official

purity and germination analysts. Currently, five MDA seed analysts are certified by AOSA in both purity and germination testing. The laboratory staff also routinely participates in various seed referee tests. These referees develop new testing methodology and ensure uniform and accurate seed testing throughout the country, while also serving as continuing education requirements necessary for certified analysts to maintain their credentials.

SEED REGULATORY ACTIVITIES

The Maryland Seed Law requires all seed offered for sale in the state be labeled accurately. This includes agricultural, vegetable, flower, lawn, and turf seed, as well as seed of trees, shrubs, native species, wildflowers, and seed used in reclamation and wetlands mitigation and conservation projects. Quantities of seed offered for sale to Maryland's consumers range from small packets of vegetable and flower seed to bulk sales of thousands of pounds of crop seed. All seed distributed in Maryland is subject to inspection by the department. For much of its seed needs, Maryland relies on other areas of the country, and the world, where climates are better suited for seed production. Thus, it is important that Maryland maintain a strong and effective regulatory program in order to prevent low quality seed from entering the state. The department inspects both retail and wholesale seed dealers throughout the state. Inspectors review label claims, ensure that germination test dates are current, and look for seed lots that have been found to be mislabeled or otherwise illegal for sale based on samples taken at other locations. Seed lots are sampled and submitted to the laboratory for testing. Lots found in violation of the Maryland Seed Law are placed under a stop sale order until they are brought into compliance. Corrective action may include re-labeling, reconditioning, destruction of the seed lot, or its removal from the state. Seed dealers who fail to comply with a stop sale order are subject to civil penalties.

SEED CERTIFICATION

The seed certification program is adapting to changes in the seed business. As large investments in biotech research by private companies increase, demand for traditional certification services decrease, as does the involvement of public institutions, which have been the source for most certified seed varieties. With the increased number of crop varieties being released by private companies, the demand for quality assurance inspections by third parties is strong,

particularly from small to medium-sized seed companies that cannot afford their own quality control programs. Companies growing seed in Maryland look to the department for expertise in field inspections, sampling, and laboratory analysis for quality control. The department anticipates that quality control inspection acreage will increase as certified acreage decreases. Staff members help seed growers and conditioners produce a product that meets some of the highest quality standards in the United States. Maryland seedsmen have become a net exporter of wheat, barley, and soybean seed, adding much revenue to the Maryland agriculture economy. The department cooperates with the Maryland Crop Improvement Association, the Maryland Agricultural Experiment Stations, and the University of Maryland in the production and distribution of Maryland foundation seed. Much effort is spent to maintain the genetic purity of foundation seed of public varieties important to Maryland agriculture. This foundation seed is distributed to participating Maryland seedsmen for the production of Maryland certified seed.

SUPERVISED SEED MIXING

The supervised seed mixing system enables certification to be continued when certified lots of different kinds and varieties of seed are mixed together. Demand from the industry and consumers for this service is strong. The department's oversight of this process ensures that consumers receive quality seed. All seed used on State Highway Administration projects and for the production of Maryland certified turfgrass sod is mixed under this program. Many county and local governments, school systems, golf courses, recreation departments, and professional seeding contractors require that the seed they purchase be mixed under this program. Prior to mixing, component seed lots must be officially sampled and tested by the Maryland State Seed Laboratory. Seed lots that meet applicable standards are then mixed under the direct supervision of a department inspector who

ensures that the mixer is free of contaminants and that only approved seed lots are used in the mixture. Special tags sewn onto each bag verify that the seed was mixed under the Maryland Department of Agriculture's supervision.

TURF REGULATION

Maryland's Turfgrass Law requires that all turfgrass sod, plugs, and sprigs be accurately labeled. Due to the overall high quality of sod produced by Maryland sod growers, staff efforts are usually limited to responding to complaints which are promptly investigated and resolved. In most cases, the problems are due to site preparation and other growing conditions rather than the quality or condition of the sod. The Maryland public continues to be able to purchase some of the highest quality sod available anywhere.

TURF CERTIFICATION

Maryland's turf certification program is a national model for certification. Growers must plant varieties recommended by the University of Maryland based on performance trials conducted in this region. All seed used in this program is tested by the Maryland State Seed Laboratory and mixed under the supervision of department inspectors. All certified turfgrass fields are inspected several times during the growing season for quality. Many sod specifications require Maryland certified turfgrass as a means of assuring the use of high-quality varieties that are well adapted to this area.

CUSTOMER SERVICE

Providing good customer service is a priority of the Turf and Seed Section. Since the marketing and planting of seed is time-sensitive and weather has an impact, customers rely on department staff to provide inspections, schedule supervised mixes, and send out seed test results rapidly to enable their businesses to remain successful in the seed market.

GOAL AND OBJECTIVES

GOAL 1. ENSURE THAT SEED OFFERED FOR SALE IS ACCURATELY LABELED AND IN COMPLIANCE WITH MARYLAND SEED LAW IN ORDER THAT THE CITIZENS OF MARYLAND MAY RELY ON THE ACCURACY OF THE LABELING AND THUS BE ASSURED THEY ARE PURCHASING THE QUALITY OF SEED THEY DESIRE.

OBJECTIVE: ENSURE THAT 90 PERCENT OF SEED LOTS OFFERED FOR SALE IN MARYLAND ARE LABELED CORRECTLY.

Performance Measures	Actual 2018
Outcome: Percent of Seed Lots Found to be Correctly Labeled	89.6%

TURF AND SEED ACTIVITIES: 2016- 2018

	2016	2017	2018
Field Inspections			
Acres of Turf Inspected	6,863	5,585	6,990
Acres of Crop Seed Inspected	9,734	8,372	8,931
Supervised Mixing			
Pounds of Seed Mixed (thousand)	1,707	2,104	1,878
Retail and Wholesale Seed Inspections			
Number of Lots Sampled	897	775	779
Number of Regulatory Seed Tests Conducted	2,382	2,047	2,056
Seed Testing			
Samples Tested	3,072	2,592	2,587
Service Seed Tests Conducted	4,782	4,218	4,082



2018 Annual Report | Office of Resource Conservation

The Office of Resource Conservation works closely with Maryland farmers to plan and implement conservation practices and programs that balance crop and livestock production with the need to protect natural resources. The office provides educational and financial assistance, technical assistance, and regulatory programs to improve resource management and help Maryland achieve Chesapeake Bay restoration goals. Conservation staffers work with local, state, and federal agencies to implement policies and programs established by the State Soil Conservation Committee. The Office of Resource Conservation is comprised of five key areas: Program Planning and Development, Conservation Grants, District Operations, Watershed Implementation, and the Nutrient Management Program.

STATE SOIL CONSERVATION COMMITTEE

Established in 1938, the State Soil Conservation Committee (SSCC) consists of 11 members representing local soil conservation districts and state and federal agricultural and natural resource agencies. The committee coordinates the activities of Maryland's 24 soil conservation districts and appoints district supervisors. The committee also develops, reviews, and refines policies on soil conservation and water quality issues, while advising the Maryland Agriculture Secretary on these matters. Importantly, the committee serves as a forum for all agencies involved in protecting natural resources.

In Fiscal Year 2018, the SSCC:

- Recommended ways to stretch Maryland Agricultural Water Quality Cost-Share (MACS) Program cost-share dollars to fund more best management practices;
- Surveyed soil conservation districts on legal issues and support needs;
- Developed training for soil conservation district supervisors focusing on collaboration opportunities when seeking outside funding sources and updating

outreach and information methods;

- Received overviews of urban agriculture programs from the University of Maryland Extension in Baltimore City and several agencies in Prince George's County;
- Received a briefing on the 2018 Farm Bill by representatives of the National Association of Conservation Districts;
- Received an update on preliminary findings from a three-year study on the Effects of Irrigation on Nitrate Transport to the Groundwater by staff members from the U.S. Geological Survey;
- Attended a presentation on Soil Remediation presented by the University of Maryland Extension staff in Baltimore City; AND
- Received an update on Maryland's Aligning for Growth policy that addresses the increase in the state's pollution load from increased population growth and new development.

PROGRAM PLANNING AND DEVELOPMENT

Program Planning and Development is responsible for planning, developing, and coordinating policy, programs, and public information about resource conservation issues and nonpoint-source pollution. Programs and activities are coordinated among local soil conservation districts, federal and state agencies, and public and private agricultural and natural resource organizations. The section also provides staffing support to the State Soil Conservation Committee (SSCC) and the Conservation Reserve Enhancement Program Advisory Committee.

Animal Waste Technology Fund. Established in 2013, the Animal Waste Technology Fund provides grants to companies that demonstrate new technologies on farms and provide alternative strategies for managing animal manure. These technologies may generate energy from animal manure, reduce on-farm waste streams, and repurpose manure by creating marketable fertilizer and other products and

by-products. The Animal Waste Technology Fund issued a request for proposals in August 2017, and received four bids that were reviewed by a five-member technical review subcommittee. To date, the program has issued \$5.85 million in grants.

During FY 2018, the Animal Waste Technology Fund awarded approximately \$2 million in grants for two animal waste management technology projects located in Cecil County and on Maryland's Lower Eastern Shore. The grants are part of the state's ongoing commitment to manage animal manure, protect natural resources, and pursue renewable energy sources.

- **Kilby Farm, LLC.** The department awarded \$1.85 million to Kilby Farm, LLC. to install an anaerobic digester at this 400-head dairy operation. The project is a retrofit to an existing, but non-operational digestion system that will create a reliable power supply for the farm throughout the year. The system upgrade is designed to offset all or most of the farm's energy requirements. Wiring, plumbing, physical alterations, and equipment purchases will be covered by the grant. The retrofit will allow the farm to convert more manure to solids and improve its management and transport of manure to other farmers seeking this valuable nutrient source for phosphorus-deficient crop fields. This project is funded with the support of the Strategic Energy Investment Fund administered by the Maryland Energy Administration.
- **Planet Found Energy Development, LLC.** The department awarded \$220,000 to Planet Found Energy Development, LLC. to install a soil blending and bagging system on an existing 1,250 ton per year combined anaerobic digestion and nutrient capture system facility. The system upgrade will create tailored and stabilized field amendments and potting soils derived from poultry litter. The new technology creates a more precisely blended, nutrient-adjusted poultry litter product. This, in turn, allows nutrient application rates to be custom-tailored to individual farms and products, resulting in large cost reductions for manure transport since the technology promotes utilization on the Lower Eastern Shore while alleviating nutrient runoff concerns associated with the traditional use of poultry litter. Additionally, the system has the potential to greatly increase the market value of poultry litter by-products by producing customized products that reach beyond farm-based agriculture.

Geographic Information Systems (GIS). A Geographic Information System captures, stores, manipulates, visualizes, and presents all types of data for decision-making, resource management, and development planning. Data from many sources, including digitized and scanned maps, aerial photography, soil surveys, and global positioning systems, are integrated and analyzed using GIS to create and share "smart maps."

In FY 2018, GIS staff provided technical assistance and spatial data to program areas within the department. Training sessions were conducted on the new ArcGIS Pro interface and its functionalities. ArcGIS Pro is a next generation 64-bit desktop GIS product that provides professional 2D and 3D mapping capabilities. The department's web map applications were also updated with the most current data and enhanced with additional tools. GIS staff began work on an Interactive Agricultural Map of Maryland that uses datasets from different programs within the department. When complete, the web map will provide a composite picture of Maryland agriculture that is user-friendly. The department celebrated GIS Day on November 15, 2017, by offering presentations, demonstrations and poster sessions for GIS users and non-users. GIS staff attended conferences, training sessions, and workshops on ArcGIS Pro and continued to participate in an inter-agency technical committee that implements policies related to the transparency, availability, and quality of spatial data in Maryland.

Information and Education. This program provides creative, editorial, web content and graphics, and production services to program areas within the Office of Resource Conservation. Displays, brochures, fact sheets, and conservation education materials are provided to soil conservation districts and the University of Maryland Extension offices to assist with educational outreach. In FY 2018, annual reports for soil conservation districts, the Maryland Agricultural Water Quality Cost-Share (MACS) Program and the Nutrient Management Program were produced along with the spring and winter editions of the Maryland Nutrient Management Newsletter. Farmer and citizen outreach programs and materials were developed to promote the Animal Waste Technology Fund, the Conservation Reserve Enhancement Program, Conservation Grants, Backyard Actions for a Cleaner Chesapeake Bay, the Manure Happens Education Program, the Phosphorus Management Tool, and Maryland's Lawn Fertilizer Law. During the fiscal year, educational exhibits were provided for approximately 25 events, including the Maryland State Fair, the Maryland Home and Garden Show, and county fairs and agricultural events taking place throughout Maryland. Thirty additional requests for conservation information was fulfilled

for teachers, Master Gardeners, soil conservation districts, garden clubs, environmental groups, and homeowner groups.

CONSERVATION GRANTS

The Maryland Agricultural Water Quality Cost-Share (MACS) Program helps farmers finance water quality improvement projects on their farms, invest in sustainable agricultural practices, and comply with federal, state, and local environmental requirements. In FY 2018, the program provided Maryland farmers with \$25.2 million in cost-share grants to install 2,008 conservation projects on their farms to prevent soil erosion, manage crop nutrients, and protect water quality. Grants cover up to 87.5 percent of the cost to install more than 30 eligible best management practices, including cover crops, grassed waterways, manure storage structures, and stream protection practices. Farmers receiving these grants invested about \$730,000 of their own money into projects that will prevent an estimated 2.5 million pounds of nitrogen, 100,107 pounds of phosphorus, and 5,225 tons of soil from entering Maryland waterways.

Projects Financed with Special Funds. MACS receives funding from the Chesapeake Bay Restoration Fund and the Chesapeake Bay 2010 Trust Fund to finance highly-valued best management practices included in Maryland's Bay restoration commitments. These include the state's popular Cover Crop Program and the contract signing incentive payment for the Conservation Reserve Enhancement Program, a federal-state partnership program that provides incentives to farmers to protect environmentally sensitive land. Portions of the Manure Transport Program, certain best management practices, and grants to help farmers cover the cost of injecting manure into the soil are financed using these funding sources.

- **Cover Crop Program.** The Cover Crop Program is the largest and most popular cost-share program offered by MACS. Cover crops are important to the health of the Chesapeake Bay and the productivity of Maryland's farmland. In the fall, cold-hardy cereal grains and legume mixes are planted as cover crops in newly harvested fields. Once established, they recycle unused plant nutrients remaining in the soil, control erosion over the winter, and build healthy soils for future crops. MACS provides grants to help farmers offset seed, labor, and equipment costs associated with planting cover crops on their fields following the fall harvest. A late harvest combined with heavy rains and poor field conditions played a significant role in reducing this year's cover crop planting. During the 2017-2018 planting season, farmers planted 395,862 acres of traditional cover crops

statewide using approximately \$18.8 million in MACS cost-share grants. This figure does not include cover crops planted for harvest, which were not eligible for cost-share this year.

- **Manure Transport Program.** This program provides grants to help poultry, dairy, beef, and other livestock producers transport manure away from farms with high soil phosphorus levels. The program experienced tremendous growth in FY 2018 as farmers continue to transition to Maryland's Phosphorus Management Tool regulations. During the year, the transport program provided Maryland farmers with \$1.02 million in grants to transport 249,421 tons of manure to approved farms and businesses. Delmarva poultry companies provided \$453,876 in matching funds to transport poultry litter.
- **Conservation Reserve Enhancement Program.** Maryland's Conservation Reserve Enhancement Program is a federal-state partnership program that pays landowners to take environmentally-sensitive cropland out of production for 10 to 15 years and install conservation practices that protect water quality and provide wildlife habitat. MACS provides participating landowners with grants to establish conservation practices on environmentally-sensitive land that they have agreed to no longer till or graze. In FY 2018, MACS provided landowners with \$200,195 in grants to install 54 stream protection projects. Special funds are used to award a \$100/acre signing bonus to landowners who enroll or re-enroll land in the program. In FY 2018, landowners received \$709,208 in signing bonuses.
- **Manure Injection Program.** This grant program helps farmers comply with Maryland's nutrient management regulations while making the most of manure resources. In FY 2018, the program provided 43 farmers with \$311,460 in grants to inject manure into the soil.

DISTRICT OPERATIONS

This program provides operating funds and staffing support to the state's 24 soil conservation districts for promotion and delivery of local soil conservation and water quality programs to the agriculture community.

Technical Assistance. In FY 2018, the program funded 73 technical positions throughout the state's 24 local soil conservation district offices. An additional 43 agricultural technicians and conservation planners were funded by grants provided by the 2010 Chesapeake and Atlantic Coastal Bays Trust Fund.

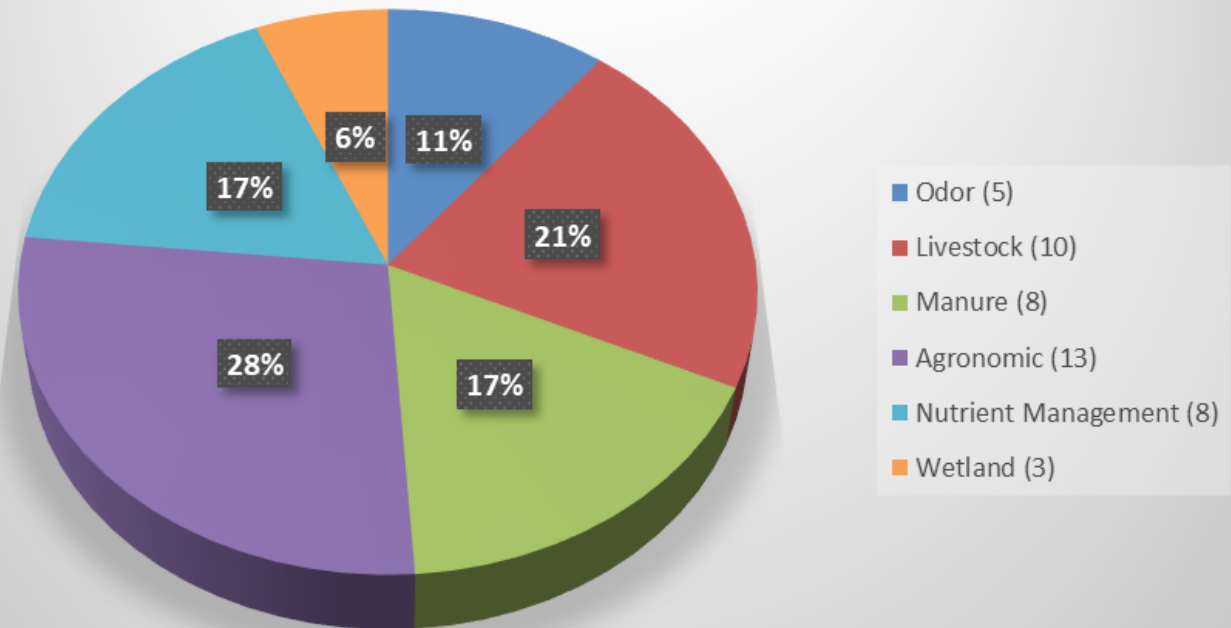
Soil Conservation and Water Quality Plans. Technical staff working in local soil conservation district field offices work with farmers to develop Soil Conservation and Water Quality Plans (SCWQPs) to protect natural resources on their farms. Unlike nutrient management plans, which deal specifically with fertilizer and manure applications, SCWQPs address a range of natural resource concerns for the entire farming operation. Due to their importance in protecting water quality, SCWQPs are included in Maryland’s Watershed Implementation Plan (WIP) to restore the health of the Chesapeake Bay. SCWQPs are required for farmland enrolled in numerous federal and state programs including the Federal Food Security Act, the Maryland Agricultural Land Preservation Foundation Program, and the Chesapeake and Atlantic Coastal Bays Critical Area Protection Program. In addition, the Maryland Department of the Environment (MDE) requires certain livestock and poultry farmers to implement SCWQPs as part of its Maryland Animal Feeding Operation (MAFO) permitting process. In FY 2018, 895,459 acres of agricultural land were managed using SCWQPs. In addition, technical staff helped farmers install 2,192 best management practices on their farms during the year to control soil erosion, manage nutrients, and protect water quality. These best management practices were supported by both state and federal financial assistance programs.

Enforcement. Agricultural complaints concerning water pollution are handled using a progressive approach that is based on the severity of the situation. Conditions likely to cause pollution or that result in inadvertent farm pollution require timely corrective action, whereas chronic or willful mismanagement of farm resources is handled through a formal enforcement action.

During the year, the department and MDE worked jointly with soil conservation districts to investigate farm management complaints and take action against polluters when necessary. In FY 2018, the program received 47 complaints concerning odor, livestock, manure, sediment, nutrient management, and wetlands and stream disturbance issues. Forty of these complaints were corrected or closed, four complaints are pending, and three enforcement actions were initiated.

Agricultural Water Management. Drainage ditches are common on the Eastern Shore. On Maryland’s Eastern Shore, a network of approximately 820 miles of ditches is maintained by 101 public drainage associations (PDAs) and four public watershed associations in Caroline, Queen Anne’s, Somerset, Wicomico, and Worcester counties. This network drains approximately 183,000 acres of agricultural and developed land. The program regulates local public drainage associations

2018 Types of Agricultural Complaints



to ensure that operation and maintenance plans are in good working order and that best management practices are protecting water quality.

Concentrated Animal Feeding Operations (CAFOs)

Permitting and Compliance Assistance. The department works closely with MDE to help CAFOs comply with permit requirements. The program assesses Eastern Shore poultry operations to help farmers determine if they are subject to permit requirements, works with MDE to resolve permit and compliance issues, and helps CAFOs with recordkeeping, site selection, annual reporting, and facilities maintenance. During the year, the department's regional office in Salisbury along with soil conservation districts on the Eastern Shore helped 87 farmers obtain Comprehensive Nutrient Management Plans (CNMPs) required by their permits.

Maryland Envirothon. The State Soil Conservation Committee and soil conservation districts are primary sponsors of the Maryland Envirothon, an outdoor natural resources competition for high school students interested in nature and conserving our state's valuable natural resources. Designed by soil conservationists, foresters, wildlife experts, and other natural resource professionals, the Envirothon moves students out of the classroom to solve real life environmental problems in a natural setting. Students are trained and tested in aquatics, forestry, soils, wildlife, and a special environmental issue that changes from year to year. This year's special issue was Western Rangeland Management. Students compete at the local, state, and national levels. A five-member team of students from Carroll County won the Maryland competition and went on to place 24th out of 50 teams participating in the 2018 National Conservation Foundation Envirothon held at Trent University in Peterborough, Ontario. The national event featured teams from more than 50 states and Canadian territories.

WATERSHED IMPLEMENTATION PROGRAM

This program provides direction and leadership in developing and evaluating strategies to carry out agricultural commitments included in Maryland's Watershed Implementation Plan (WIP) to protect and restore the Bay by 2025, as required by the Chesapeake Bay Agreement.

Phase III Watershed Implementation Plan (WIP). In 2010, the U.S. Environmental Protection Agency (EPA) established a Total Maximum Daily Load (TMDL) of nutrients and sediment that can enter the Bay and its tributaries. The TMDL represents the maximum amount of pollution that the Bay can withstand and still meet water quality standards. The six Bay states and

the District of Columbia are required to follow WIPs outlining specific actions and strategies that they will take to achieve these pollution limits by 2025. FY 2018 represented the start of the final phase of the multi-state Bay cleanup effort. The midpoint assessment of the program's progress through 2017 determined that Bay jurisdictions have made considerable progress in reducing pollution. In 2018, modeling tools used to gauge the cleanup's progress were updated with the latest science. The updated model shows that while Maryland is on track to meet its phosphorus and sediment reduction goals, additional focus is needed to reduce nitrogen levels in the Bay. Maryland is developing its third and final WIP. Public meetings were planned for summer 2018 in every Maryland county to discuss Phase III strategies. The agricultural component of Maryland's plan will build on previous statewide and local efforts and will be submitted to the Chesapeake Bay Program for public comment in April 2019. Progress in meeting the new Phase III strategies will be reported once the final WIP is approved.

Agricultural Representation. Department representatives serve on a number of Chesapeake Bay Partnership workgroups where they provide technical information and input concerning restoration goals, policies, programs, and research needed to reduce agricultural pollutants entering the Bay and its tributaries. In FY 2018, the department chaired the state's Agriculture Workgroup.

Nutrient Trading. During the year, the Maryland Department of Agriculture and the Maryland Department of the Environment (MDE) continued their collaborative efforts to establish a voluntary, market-based program promoting the use of nutrient and sediment trading as a viable option for achieving the state's water quality goals. The Water Quality Trading Advisory Committee, which was tasked with reviewing and revising a comprehensive trading manual for all point and nonpoint sources, as well as assisting with the development of trading regulations to implement the manual's policies and guidance, completed most of its work during FY 2018. MDE submitted final trading regulations for approval in December 2017. Following a delay for further study, the regulations took effect in July 2018.

Conservation Tracker. This integrated database management system tracks agricultural best management practices installed on Maryland farms. The system tracks both publicly and privately funded best management practices outlined in Maryland's WIP to protect and restore the Bay. In FY 2018, information obtained through Conservation Tracker was reported to the EPA's Chesapeake Bay Program for use in assessing restoration progress. As part of the Chesapeake Bay

TMDL Midpoint Assessment, the department is required to strengthen accountability and transparency of best management practices installed on Maryland farms. In response, the program developed a six-member verification task force to provide an objective, third-party review of all best management practices installed on farms since 1985. The verification task force has reviewed approximately 8,700 practices since 2016. Seventy-three percent of these practices continue to meet quality standards. Approximately 23 percent of the practices were no longer present, and 4 percent required maintenance.

Agricultural Certainty Program. Maryland's Agricultural Certainty Program rewards farmers for going the extra mile to protect natural resources on their farms. Participating farmers receive a 10-year exemption from new environmental laws and regulations in return for installing voluntary best management practices on their farms that meet the Chesapeake Bay's 2025 water quality goals. During FY 2018, the program offered required training sessions on the use of Maryland's online assessment tool, the Maryland Nutrient Tracking Tool. The training is required for members of the verification task force who confirm that best management practices installed on Maryland farms are in good working order. In December, a special event was held in Frederick County to promote the program and garner additional interest among farmers in Western Maryland and across the state.

Research and Special Projects. The Watershed Implementation Program manages multiple ongoing research and technical assistance grants totaling \$1.5 million. The projects demonstrate new and innovative ways to improve manure management, reduce nutrient runoff, control soil erosion, and safeguard water quality. An ongoing demonstration focuses on effective strategies to reduce phosphorus concentrations in dairy manure. While results of this study suggest that certain strategies may be used to reduce phosphorus levels in dairy effluent, widespread adoption is unlikely due to high estimated operating costs of implementing the strategies combined with consistently low milk prices that are affecting the viability of many small dairy farms.

MARYLAND NUTRIENT MANAGEMENT PROGRAM

The Nutrient Management Program protects water quality in the Chesapeake Bay and its tributaries by ensuring that farmers and lawn care professionals apply fertilizers, animal manure and other nutrient sources in an environmentally sound manner. The Agricultural Nutrient Management

Program implements regulatory requirements, a certification and licensing program for nutrient management consultants and farmers, and continuing education classes. The Turfgrass Nutrient Management Program oversees a certification and licensing program for lawn care professionals, enforcement activities, continuing education classes for certified professionals, and a homeowner education program.

Agricultural Nutrient Management Program. Maryland law requires farming operations that generate \$2,500 in gross income or have 8,000 pounds or more of live animal weight to follow nutrient management plans when fertilizing crops and managing animal manure. These science-based plans specify how much fertilizer, manure, or other nutrient sources may be safely applied to crops to achieve yields and prevent excess nutrients from impacting waterways. To further protect water quality, farmers with fields containing high soil phosphorus levels are required to transition to the new Phosphorus Management Tool over the next several years. This updated tool identifies fields at risk for phosphorus loss and prescribes best management practices that prevent the additional buildup of soils that are already saturated.

Phosphorus Management Tool. Maryland's Phosphorus Management Tool (PMT) regulations require farmers with high soil phosphorus levels to transition from the state's current phosphorus assessment tool, the Phosphorus Site Index, to the state-of-the-art PMT. The move provides waterways with enhanced protection against phosphorus runoff and helps Maryland meet its Bay cleanup goals for phosphorus. To give farmers time to make needed adjustments to their operations, the PMT regulations are being phased in over the next several years.

As of June 30, 2018:

- Soil test data results have been submitted for 1,114,418 acres of land or 87 percent of Maryland's 1,277,930 acres of regulated farmland. Less than 20 percent of farmland is subject to the PMT. These farms have a soil phosphorus fertility index value (FIV) that is greater than 149 FIV.
- The program continues to target farms that have not submitted soils data for audits and inspections.
- Three tier groups have been established for farms required to transition to the PMT.
- The highest risk group, whose average soil phosphorus FIV is greater than 450, includes 96 operations managing 10,894 acres. This group began transitioning to the PMT in 2018.

- The medium risk group, who has an average soil phosphorus FIV of 300-450, includes 252 operations managing 54,271 acres of land. This group will begin transitioning to the PMT in 2019.
- The low risk group, with an average soil phosphorus FIV of 150-299, includes 1,313 operations managing 122,705 acres. This group will begin transitioning to the PMT in 2020.
- High risk farms, with a FIV of 500 or greater, are already banned from receiving additional phosphorus applications.

Compliance and Enforcement. Maryland farmers are required to follow nutrient management plans that specify the amount, timing, and placement of nutrients for each crop. These plans are prepared by University of Maryland Extension advisors, certified private consultants, or farmers who are certified to develop plans for their own operations. Maintaining compliance requires the farmer to update his/her nutrient management plan before it expires, submit Annual Implementation Reports summarizing nutrient applications for the previous year, and most importantly, following their nutrient management plans. The program's team of eight nutrient management specialists analyzes Annual Implementation Reports and conducts site visits to verify that an operator is following the plan.

The following are enforcement figures for FY 2018:

- **Nutrient Management Plan Submissions.** New farming operations are required to submit copies of their initial nutrient management plans to the department. This is the first step toward achieving compliance. By the end of the fiscal year, the program had nutrient management plans on file for 5,361 regulated farm operations. The program actively works to locate "new farming operations" and pursues enforcement actions against operators who have not met this requirement.
- **Annual Implementation Reports.** Farmers are required to update their nutrient management plans before they expire and submit Annual Implementation Reports to the department by March 1 summarizing nutrient applications for the previous calendar year. By the end of the fiscal year, approximately 96 percent of regulated farmers managing about 1.3 million acres of land had submitted these reports. The department issued \$48,500 in fines against 194 operators for late or missing implementation reports.
- **On-Farm Audits and Inspections.** During the fiscal year, enforcement specialists conducted 725 on-farm audits.

Fifty-nine percent of these farms were in compliance. The department is actively pursuing full compliance for all audited operations. In FY 2018, the department issued \$51,750 in fines against 63 operators for violations.

Certification and Licensing Programs. The following activities took place in FY 2018:

- **Nutrient Management Exam Training.** The Nutrient Management Program provided a two-day training course for individuals planning to take the certification exam. Thirty-five new consultants were certified, bringing the total number of certified consultants to 1,419.
- **University of Maryland Consultant Program.** Funded 20 University of Maryland advisors who provide farmers with nutrient management plans free of charge.
- **Farmer Training and Certification.** Trained and certified 25 farmers to write nutrient management plans for their own operations. To date, 675 farmers have been trained and certified.
- **Nutrient Applicator Voucher Training.** Partnered with the University of Maryland Extension to conduct a series of statewide voucher training sessions that were attended by 526 farmers.

Continuing Education. Certified consultants are required to take 12 hours of continuing education credits every three years. In FY 2018, 144 continuing education events were attended by 3,163 individuals. Enhanced nutrient management practices are essential in helping Maryland meet its Bay cleanup goals.

Working with the University of Maryland Extension, the following practices were promoted as continuing education classes and field days:

- Variable rate application and mapping equipment technology (Allows farmers to vary the rate of crop inputs based on crop needs)
- Split applications of nitrogen fertilizer (Based on University of Maryland recommendations)
- Use of nitrogen stabilizers to protect against nitrogen losses

Turfgrass Nutrient Management Program. Maryland's Lawn Fertilizer Law requires lawn care professionals hired to apply fertilizer to turf to be certified by the department or work under the direct supervision of an individual who is certified. The law applies to professionals hired to fertilize home lawns,

as well as individuals responsible for turf management at golf courses, public parks, airports, athletic fields, businesses, cemeteries, and other non-agricultural properties. The law requires both homeowners and lawn care professionals to obey fertilizer application restrictions, use best management practices when applying fertilizer to lawns, observe designated fertilizer blackout dates, and follow University of Maryland fertilizer recommendations.

The following activities took place in FY 2018:

- **Certification and Licensing.** Eight Professional Fertilizer Applicator exams were offered across the state and attended by 118 lawn care professionals. The program issued 906 business licenses and 1,550 Professional Fertilizer Applicator Certificates. Another 1,550 lawn care company employees have been trained to apply fertilizer under the supervision of a certified professional.
- **Training, Certification and Licensing.** Professional fertilizer applicators are required to complete two hours of continuing education each year in order to renew their annual certificates. The program offered 16 recertification courses for turfgrass professionals and approved numerous training opportunities offered by private industry and trade groups.
- **Annual Activity Reports.** License holders are required to file an annual activity report with the program by March 1 covering the previous year. By the end of the fiscal year, the program had received activity reports for 900 businesses representing a 96 percent compliance rate.
- **Enforcement Activities.** During the year, 207 record reviews were conducted. Thirty warnings were issued and ten violations were resolved through follow-up inspections and education.
- **Revised Regulations.** Following legislative changes made to the Lawn Fertilizer Law during the 2018 session of the Maryland General Assembly, the program revised its regulations for organic fertilizer products to make them consistent with those for synthetic products. Additionally, the changes give professional fertilizer applicators more choices in the products they can use. The revised regulations took effect on October 1, 2018.
- **Homeowner Outreach.** The program continued to educate citizens about Maryland's Lawn Fertilizer Law through partnerships with the University of Maryland Master Gardeners, news releases, social media, the Internet and public events. During the year, a new brochure on the importance of soil testing was developed for homeowners.

MARYLAND DEPARTMENT OF AGRICULTURE BUDGET ALLOCATION FOR FY 2018

	GENERAL	SPECIAL	FEDERAL	BONDS	TOTAL
Operating	\$35,348,106	\$68,713,839	\$3,603,519		\$107,665,464
Capital		\$33,924,000			\$33,924,000
TOTAL	\$35,348,106	\$102,637,839	\$3,603,519		\$141,589,464
Bonds					
	MACS			\$8,000,000	\$8,000,000
	(AH lab)			\$630,000	\$630,000
Total				\$8,630,000	\$8,630,000

LONG SERVICE AWARDS

MARYLAND DEPARTMENT OF AGRICULTURE HONORS EMPLOYEES WITH LONG SERVICE AWARDS

On October 4, 2018, the Maryland Department of Agriculture honored 63 employees for their years of dedicated service to the department and to the state. Of the 63 employees being honored – 15 have 30 or more years of service and six of those individuals have more than 40 years. All together, these 63 employees represent 1,175 years of public service and over 2.4 million hours worked and more than 30,000 paychecks.

The following is a listing of department employees by county who were recognized with long-service awards.

Allegany

- Charlotta Winebrenner, Forest Pest Management – Western Region, 30 years

Anne Arundel

- Sandra Mills, State Chemist, 45 years
- Sally Terry, Executive Direction, 45 years
- Deanna Baldwin, Marketing, Animal Industries & Consumer Services, 40 years
- Joseph Harrington, Administrative Services, 40 years
- Shelley Hicks, Plant Protection and Weed Management, 35 years
- Darlene Hallett, Plant Industries & Pest Management, 25 years
- Patricia Ray, State Chemist Registration, 25 years
- Bonita Brown, Fiscal Services Accounts, 20 years
- Francisca DeCastro, Human Resources, 20 years
- Misti Boggus, Mosquito Control Eastern Region – Salisbury, 5 years
- Della Penn, Animal Health Admin Support, 5 years
- Aaron Shurtleff, Plant Protection and Weed Management, 5 years
- Marcia Solomon, Plant Protection and Weed Management, 5 years

Baltimore City

- Thomas Fagan, Weights & Measures Headquarters 2, 35 years
- Anthony Dewitt, Mosquito Control, 15 years

Baltimore County

- Kenneth Ramsburg, Marketing, Animal Industries & Consumer Services, 35 years
- Mark Powell, Marketing, Animal Industries & Consumer Services, 15 years

Calvert

- Julie Oberg, Deputy Secretary, 15 years

Caroline

- Dexter Crotts, Animal Health Salisbury Lab, 20 years
- Deborah Freburger, Nutrient Management, 10 years
- Kim Macfarland, Turf & Seed Regulatory and Operations, 10 years

Carroll

- Melissa Edmonds, Carroll County Soil Conservation District, 20 years
- Glenn Krout, Pesticide Regulation Inspection Team 2, 20 years
- Marla Stevens, Animal Health Assistant Chief Field Services, 15 years
- Michael Scheffel, District Operations, 10 years

Cecil

- Norman Astle, Resource Conservation, 20 years
- Anthony Calao, Weed Control, 20 years
- Daniel Polite, District Operations Eastern Shore, 20 years

Dorchester

- Charles Bradford, District Operations Eastern Shore, 5 years

Frederick

- Mark Freese, District Operations Western and Central Maryland, 20 years
- Roger Martin, Weights & Measures Headquarters 1, 10 years

Harford

- Brian Galbreath, District Operations Western and Central Maryland, 20 years

Howard

- Dale Morris, Plant Industries & Pest Management, 40 years
- Yvonne Anderson, Central Services Office, 5 years
- Kimberly Lambert, Animal Health Frederick Lab, 5 years
- Ramesh Pokharel, PP Laboratory Services, 5 years

Montgomery

- Kumara Kadawedduwa, Turf & Seed Regulatory and Operations, 10 years
- Samarakoon Yapa, Pesticide Regulation Inspection Team 2, 10 years
- Justin Hayes, Office of the Attorney General, 5 years
- Tong Hsu, Weights & Measures Headquarters 2, 5 years

Prince George's

- Mallika Sharma, State Chemist Laboratory, 10 years
- Susan Husk, State Board of Veterinary Medical Examiners, 5 years

Queen Anne's

- Matthew Yoash, Queen Anne's County Soil Conservation District, 30 years
- Anthony Riggi, District Operations Eastern Shore, 20 years

Somerset

- Steven Dorsey, Nutrient Management Regulatory and Compliance, 10 years

St. Mary's

- George Beavan, District Operations Patuxent Region, 20 years
- Thomas Koviak, District Operations Patuxent Region, 20 years
- Sara Lewis, District Operations Patuxent Region, 10 years

Talbot

- Shawn Smith, Talbot County Soil Conservation District, 10 years
- Heather Harmon-Disque, Forest Pest Management, 5 years

Wicomico

- Robert Robison II, Animal Health Salisbury Lab, 40 years
- Thomas Filbert, Office of the Attorney General, 35 years
- Arthur Meilhammer, Mosquito Control Eastern Region – Salisbury, 35 years
- David Mister, District Operations, 30 years
- Robin Culver, Conservation Grants Program Eastern Shore, 10 years

Worcester

- Colin McAllister, District Operations Eastern Shore, 10 years

Other

- Sarah Cannon, Forest Pest Management, 35 years, West Virginia
- Matthew McMahon, Carroll County Soil Conservation District, 20 years, Pennsylvania
- Keith Potter, Nutrient Management Regulatory and Compliance, 20 years, Pennsylvania
- Richard Shepard, District Operations Eastern Shore, 20 years, Delaware
- Christopher Burch, District Operations Western and Central Maryland, 10 years, Pennsylvania
- Sarah Zastrow, Mosquito Control, 5 years, Washington D.C.



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Wayne A. Cawley, Jr. Building
50 Harry S Truman Parkway
Annapolis, MD 21401-7080
Baltimore/Annapolis 410-841-5700
Washington Metro Area 301-261-8106
Maryland Relay Service (TTY Users) 800-735-2258
Toll Free 800-492-5590
Fax 410-841-5914
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