



2021



Maryland Department of Agriculture | 2021 Annual Report



Governor Larry Hogan



Lt. Governor Boyd K. Rutherford



Secretary Joseph Bartenfelder



Dep. Secretary Steven A. Connelly

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.



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Department of Agriculture

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Front cover photo: Fresh summer produce from a Maryland farm.

Back cover photo: Blue catfish from the Potomac River.

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GREETINGS,

On behalf of Governor Larry Hogan and Lt. Governor Boyd K. Rutherford, it is my pleasure to present the Maryland Department of Agriculture (MDA) Annual Report for FY21.

During FY21, our department worked to adapt and adjust to the impacts of the COVID-19 pandemic while continuing to provide customer services and regulatory activity with minimal disruption. Agriculture has been an essential industry since the very beginning of the pandemic response, and I am proud of the job our agency has done to support our hard working farmers, growers and producers across the state.

One thing that has not changed is our continued emphasis on resource conservation. In FY21, MDA expanded cost-share support to 100% for priority best management practices. The Manure Transport Program has seen record participation, which is critical to our efforts to prevent nutrient runoff entering the Chesapeake Bay watershed. We also saw Maryland farmers plant more than 433,000 acres of cover crops despite challenging weather conditions.

Reaching these milestones during an unprecedented global pandemic is a true testament to the shared dedication Maryland farmers and MDA have shown for environmental stewardship, and our shared commitment to providing fresh, quality food products to consumers throughout the state and beyond. We look forward to continuing our work in the next fiscal year.

Sincerely,

Joe Bartenfelder
Maryland Secretary of Agriculture



2021 Annual Report | Office of the Secretary

MARYLAND AGRICULTURAL LAND PRESERVATION FOUNDATION

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. 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 FY21 alone, MALPF settled 90 easements and preserved 10,533 acres of farmland. Since its inception through the end of FY21, MALPF has purchased easements on a cumulative total of 2,503 properties and permanently preserved 337,182 acres of farmland at a public investment of over \$827 million.

In 2021, Gov. Hogan signed Senate Bill 692 into law. This law retained Maryland's agricultural land preservation goal of 1,030,000 acres and extended the deadline to meet this goal to 2030. Additionally, the law added two more programs to the effort, the Maryland Environmental Trust (MET) and the Next Generation Farmland Acquisition Program. These two programs will contribute acreage to Maryland's preservation

goal. As reported by the Maryland Department of Planning (Planning), as of November 9, 2021, all of the contributing programs, including MALPF, have protected 853,527 acres of total private land under easement, which is nearly 83% of the 1,030,000-acre goal.

Over the past year, MALPF has continued the steady rate of new easement acquisitions, once again protecting more acres in a single year since before the "Great Recession." The continued increase in easement acquisitions settled in FY21 is a direct result of returning to the fully-funded, single-year easement application cycle that began in FY19.

Goals and Objectives	2021 Actual
Output: Total Number of Easements, Cumulative	2,503
Outcome: Total Acres Under Easements	337,182

OFFICE OF THE ATTORNEY GENERAL

In FY21, the Office of the Attorney General (OAG) at the department continued to advise and provide counsel to the Maryland Secretary of Agriculture and other department officials in implementing MDA's regulatory and promotional programs that directly affect Maryland's agriculture industry.

In one of its numerous roles, the OAG assists the department in developing and revising many of its regulatory programs. In

FY21, the OAG assisted the department in drafting regulations that amended the Manure Transport Program, the Cost-Sharing Program, the Animal Health Program, and MALPF. The OAG also assisted the department in implementing the Maryland Certified Local Farm Enterprise Program.

Furthermore, the OAG represented the department in several human resource matters, including defending issuance of

disciplinary actions and several grievance appeals. The OAG has also reviewed response documents to multiple Maryland Public Information Act requests that were filed.

Additionally, the OAG provides counsel and advice to the many boards housed within the department, including the State Board of Veterinary Medical Examiners (SBVME). The SBVME is charged with governing the practice of veterinary medicine in Maryland. In its role as Board Prosecutor, the OAG prosecuted numerous disciplinary actions against licensed veterinarians and owners of licensed veterinary facilities charged with violating the Veterinary Practice Act. The OAG also advised the SBVME on a myriad of legal issues, including questions pertaining to the Open Meetings and Public Information acts.

For MALPF, the OAG helps the program carry out its statutory

mission to preserve agricultural land and woodland in Maryland. In FY21, the OAG's assistance included: (1) advising MALPF's Board of Trustees on a wide range of issues affecting the program, including actions taken to enforce the terms of a MALPF easement; (2) representing MALPF in declaratory judgment matters in the Circuit Court for Carroll County and in the Circuit Court for Charles County; (3) helping MALPF resolve threatened litigation; (4) aiding MALPF in drafting and enacting revisions to its COMAR regulations; and (5) aiding MALPF staff in responding to Public Information Act requests.

Lastly, in FY21 the OAG provided counsel and advice to the State Soil Conservation Committee (SSCC) and many of the 24 soil conservation districts statewide. This work included helping the state's soil conservation districts respond to a multitude of Public Information Act requests.

GOVERNMENT RELATIONS

Every year during the legislative session, the government relations team at the department tracks bills that may impact the department, agriculture, rural communities, and its constituents.

Our goal is to ensure legislators and their staff know the department is a readily available resource for anything related to Maryland agriculture, whether it be constituent issues, drafting legislative proposals, etc.

2021 LEGISLATIVE SESSION

The 2021 legislative session was, for the first time ever, held completely virtually. All committee meetings, hearings, voting sessions, and floor proceedings were virtual. MDA's government relations staff adapted to the new format and conducted several meetings with legislators and attended numerous bill hearings, subcommittee workgroups, and full committee voting sessions.

As in previous years, the department played an important role in educating legislators on a number of bills that would impact the agriculture industry and the department's operational and fiscal functions.

MDA put forward two departmental bills during the 2021 legislative session that were adopted and signed into law by Gov. Hogan:

- **Senate Bill 344 – Agriculture – Cost-Sharing Program – State Cost-Sharing Funds.** This legislation allows MDA to provide up to 100% state funding assistance, previously limited to 87.5%, for the implementation of certain high-priority conservation practices that improve water quality and provide other environmental benefits
- **Senate Bill 352 – Agriculture – Multiflora Rose Management – Repeal.** This departmental bill repeals provisions that make multiflora rose a nuisance weed that must be managed. The state's agricultural industry has this plant contained and under control, therefore, the law is no longer needed.

The department also monitored a number of bills considered by the legislature in 2021. For a full list of those bills and any comments from the department, please visit: mda.maryland.gov/about_mda/Pages/2021-Legislation.aspx

In the 2021 legislative session, Senate Bill 103 established the Task Force to Study Canine Breeding Facilities and Sourcing Standards; the task force is staffed by MDA. As required by the law, the task force must study canine breeding facilities, including online sales of canines through breeding facilities. For additional information, including meeting materials, minutes, and the final report, please visit: mda.maryland.gov/about_mda/Pages/taskforce-caninebreeding.aspx

COMMUNICATIONS AND PUBLIC INFORMATION

The Communications and Public Information Office serves as MDA's liaison to the media, government agencies, elected officials, agriculture and environmental stakeholders, department employees, and the general public. Its goal is to disseminate public information in a way that reaches a variety of audiences while promoting engagement with department initiatives.

MEDIA MONITORING

The Communications Office regularly distributes news releases to traditional media outlets about MDA 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 department and its constituencies. During FY21, staff distributed 132 news releases to more than 500 media contacts and interested parties, which generated 114 logged inquiries from the media.

NEWS STORIES

The Communications Office handled a variety of inquiries throughout FY21. Highlights included the following.

- Throughout FY21, news coverage continued to focus heavily on the impact of COVID-19 on the agriculture and seafood industries.
- The summer 2021 saw tremendous media interest in the emergence of Brood X cicadas, which inundated the Baltimore-Washington area from May-July 2021.
- In September 2020, Governor Hogan announced the Maryland Farmer COVID-19 Relief Program, which used CARES Act money to provide direct payments to farmers impacted by the COVID-19 pandemic.
- In July 2020, MDA received a high volume of inquiries regarding Marylanders receiving unsolicited packages of seeds originating from China. This included dozens of inquiries from the media and hundreds from the general public. This turned out to be a national story tied to an ecommerce scam.
- In December 2020, the Phosphorus Management Tool (PMT) Advisory Committee had one last opportunity to consider the need for a one-year delay in implementation of the PMT, ultimately recommending to move forward as scheduled with implementation effective July 1, 2021. Sec. Baretfelder agreed with that decision. This process

drew interest from media ranging from agricultural and environmental press to local television news outlets.

DIGITAL ENGAGEMENT

The Communications Office continues to prioritize use of social media and other digital platforms to enhance MDA's reach and foster engagement with its messaging and outreach. The office uses a strategic approach across different platforms to reach a variety of audiences while maintaining a comprehensive voice for the department.

The overriding goal of the office's digital engagement strategy is to ensure that the public sees MDA as the authoritative, honest, and credible source for information about the agricultural activities, services, regulations, and issues under the department's purview.

Website. The department's website, *mda.maryland.gov*, functions as the primary source for all information regarding MDA and its programs. In addition to program information, all press releases and public messaging are posted on the website's newsroom.

There were 395,678 sessions on MDA's website with 734,995 pageviews during FY21. This represents a slight increase over FY20 metrics, marking another year of consistent sustainable audience growth.

Note: The Maryland's Best website was not included in the MDA website metrics reporting. MarylandBest.Net is a marketing website, designed to connect consumers with producers rather than to promote department information. It is hosted by a private vendor and populated by the department's Marketing Program.

Social Media. The rise of social media has revolutionized the way information is shared between government agencies, the media, and the public. The department uses social media to expand the reach of its messaging and engage directly with its constituents and stakeholders. These platforms are a cost-effective way to promote department initiatives, respond to breaking news, and foster a good relationship with those the department serves.

The department's social media activities allow MDA to:

- Maintain a constant and consistent presence in online communities and discussions;
- Provide credible information directly to the public,

without relying solely on the media;

- Monitor trends and issues in public discourse, to correct rumors, and provide alternative viewpoints on emerging controversies;
- Improve the image and increase citizen understanding of agriculture;
- Regularly and routinely, both seriously and informally, engage with citizens on a variety of issues; AND
- Promote MDA's website as the authoritative source of information for Maryland agriculture.

The department continued to emphasize its social media presence during FY20 with growing followings on Twitter and Facebook. These social media platforms provide the department direct access to Maryland's agriculture stakeholders and citizens

- MDA's official Facebook page ended FY21 with 16,595 followers, a 21% increase from the previous fiscal year. MDA's official Twitter feed ended the year with more than 16,000 followers, a 7% increase over FY20.
- Department Social Media Accounts. The department continues to maintain several program-specific accounts in addition to its official Facebook and Twitter.

Twitter.

- @MdAgDept – Official MDA account
- @MdsBest – MDA's Marketing Program
- @MdsBestSeafood – MDA's Seafood Marketing Program
- @MdEquines – Maryland Horse Industry Board
- @MdFarm2School – Farm to School Program
- @MdAgMosquito – MDA's Mosquito Control Program
- @MdGypsyMoth – MDA's Gypsy Moth Suppression Program

Facebook.

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

Instagram.

- Maryland's Best
- Maryland Horse Industry Board
- YouTube.
- Maryland Department of Agriculture
- Maryland's Best
- Maryland Horse Industry Board
- Flickr
- Maryland Department of Agriculture

SPECIAL PROJECTS

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 Department of Emergency Management (MDEM) Joint Information Center.

During the state's COVID-19 pandemic response, MDA's Public Information Officer was assigned to MEMA's Joint Information Command to assist the state with their communications response.

COVID-19 Pandemic Response. The Communications and Public Information Office has been an integral part of MDA's response to the COVID-19 pandemic. Food production is an essential industry and has remained operational throughout the state of emergency. MDA has acted as a liaison between the state and industry representatives while working closely with health officials to develop guidance documents for different sectors of the industry. The program has also acted as the department's lead for internal communications with MDA employees.

Assisting with Marketing Promotions. The Communications Office works closely with the department's marketing programs on a number of annual projects and events intended to promote Maryland products. With the pandemic impacting many traditional in-person promotions, the Communications Office worked with marketing staff to adapt the Maryland Buy Local Challenge/Buy Local Week, Maryland's Best Ice Cream Trail, Maryland Homegrown School Lunch Week, and others to incorporate more virtual activities and to ensure safety and health protocols were being abided by.

Maryland Farm & Harvest. The department continues to serve as a co-producer of the Maryland Public Television (MPT) series *Maryland Farm & Harvest*. The Communications Office serves as a liaison to MPT and plays a role in story development. More than 10 million viewers have tuned in to *Maryland Farm & Harvest* since its fall 2013 debut. The series has traveled to nearly 400 farms, fisheries, and other agriculture-related locations during its first eight seasons, covering every Maryland county, as well as Baltimore City and Washington, D.C. The series enjoyed continued success during its eighth season, airing first in November 2020, as MPT's highest-rated, locally-produced show. The series and its host,

Joanne Clendining, have won several Emmy awards for their work.

Memberships. MDA's Communications Office is actively

involved in the membership of the Communications Officers of State Departments of Agriculture, a group of communications professionals from other 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, Human Resources, Emergency Management, and Central Services.

Fiscal Services handles all centralized accounting transactions for the department. 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 and contractual payroll.

The Human Resources Office facilitates recruitment and compensation. MDA has 411 permanent employees and a varying number of contractual employees over the course of the year.

Emergency Management for MDA prepares for and responds to any hazard or emergency affecting the agricultural community

in Maryland. The department continues to evaluate and revise threat-specific management plans in cooperation with the Maryland Department of Emergency Management (MDEM). Additionally, the department continues to provide annual training and drills for first responders to ensure staff are adequately prepared to respond to emergency events.

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 255 vehicles in addition to semi-annual inspections on all vehicles. The departmental fleet traveled more than 1.5 million miles last year. The mileage figure for last year was down from the previous year due to impacts from the COVID-19 pandemic.

MARYLAND AGRICULTURAL COMMISSION

The Maryland Agricultural 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 (UMD), consumer interests, and other agricultural business sectors.

The commission meets monthly, except for July and August, to discuss issues and topics concerning Maryland's agriculture industry. This year, commission meetings were held virtually via teleconference. During every meeting, members and staff provided commodity reports from each sector.

In addition to monthly meetings, the commission typically conducts two farm tours every year, one in the fall and another in the spring. Due to the COVID-19 pandemic, the tour of Washington and Frederick counties was held virtually with videos of farms and agricultural businesses from that area.

Commission meetings along with farm tours keep the group proactive and up-to-date with agricultural issues and ensure the fulfillment of the commission's statutory mission.

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 12 members represent young farmers from across the state. The board also includes representatives from the Maryland Farm Bureau, Maryland Department of Natural Resources (DNR) Forestry Program,

Maryland Department of Commerce, and MDA.

The advisory board meets quarterly and discusses current agriculture issues relating to Maryland young farmers. During FY21, the board met virtually via teleconference and Zoom on October 21 and January 20, 2020, and later on April 21

and July 21, 2021. During the meeting, board members gave updates about their specific commodity or area of agricultural expertise.

Meeting presentations along with reports from each member and agency representative keep the board up-to-date with challenges and opportunities facing young farmers and ensures the fulfillment of the board's mission.

GOVERNOR'S INTERGOVERNMENTAL COMMISSION FOR AGRICULTURE (GICA)

The Governor's Intergovernmental Commission for Agriculture (GICA) was established by Executive Order in 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 first meeting of calendar year 2021 was held on June 30. The meeting included: a presentation by Grow & Fortify

on their economic study of "Value-Added Agriculture in Maryland"; a discussion with the Maryland Department of Health (MDH) regarding cottage food regulations; a briefing by the Southern Maryland Agricultural Development Commission (SMADC) on seasonal farm stays; and a conversation with MDA concerning the GICA toolkit being outdated and shifting more towards an agriculture resource directory.

Stay abreast of the latest GICA developments by visiting the commission's webpage: mda.maryland.gov/about_mda/Pages/gica.aspx.

USDA-NATIONAL AGRICULTURAL STATISTICS SERVICE (NASS)

The Maryland field office of the U.S. Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS), located in MDA'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, determine the feasibility of new ventures affecting Maryland farmers, and direct program research and development.

Each year the employees of NASS conduct hundreds of surveys and prepare reports that affect every facet of Maryland's agricultural community. NASS also publishes a national Census of Agriculture every five years. In November 2022, NASS will be mailing the 2022 Census of Agriculture to farmers and ranchers across the country. The Census of Agriculture looks at land use and ownership, operator characteristics, production practices, income, and expenditures. The data collected from the census is used by producers; federal, state and local governments; agribusinesses; trade associations; rural

communities; and many others. The census provides the only source of uniform, comprehensive agricultural data for every state and county in the nation.

NASS found that agriculture generated more than \$1.96 billion in cash receipts for Maryland farmers, not accounting for the additional impact provided by related jobs and services. The Maryland field office of NASS estimated there were approximately 12,400 farms in 2020 with an average size of 161 acres. Total land in farms in Maryland was around two million acres. The main agricultural commodities in Maryland, in ranking order for total sales, were: poultry, grain, milk, cattle and calves, eggs and hogs; oilseeds, dry beans, and dry peas; nursery, greenhouse, floriculture, and sod; and vegetables, melons, potatoes, and sweet potatoes. For more Maryland agricultural data, visit the USDA NASS website.

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



2021 Annual Report | Office of Marketing, Animal Industries, and Consumer Services

AGRICULTURE MARKETING AND DEVELOPMENT

The goal of the MDA's Marketing Program is to develop markets for Maryland agricultural products and to connect farmers, watermen, and food producers to those markets. Through this economic development and promotional activity, the department helps create a profitable and viable future for Maryland's number one industry, agriculture.

MARYLAND'S BEST AGRICULTURE

Maryland's Best is the agricultural marketing program at MDA. Due to COVID-19, many of the in-store promotions, farm visits and annual Maryland's Best Expo did not occur in FY21. Much of Marketing's efforts were focused on making a map of farmers markets and farm stands to connect buyers who were looking to buy food directly from producers. Staff also worked on programs designed to provide funding directly to farmers from federal COVID relief initiatives. Previous analysis of Maryland's Best prior to COVID-19 demonstrated the program's efforts increased farm sales by \$7.6 million over five years, and for every \$1 the program spent in advertising and promotions, \$15 was returned to the Maryland farmer and state economy. Primarily funded by the U.S. Department of Agriculture (USDA) Specialty Crop Block Grant Program (SCBGP), Maryland's Best 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 agritourism.

Maryland's Best has been focused on reaching the entire supply chain. Beginning with Maryland farmers, the program works to provide market intelligence on growing products that are in demand. From grocery store produce buyers to regional chefs, Maryland's Best's business-to-business marketing goals are achieved through connecting producers and buyers with farm tours, strategic events, and advertising in key industry publications.

In FY21, more than 3 million consumers received promotional messages from the department through radio, print, and online advertising. Press releases promoting Maryland agricultural products were distributed to more than 400 media outlets. For consumers, the Maryland's Best website continues to serve as the primary source of information about what's in season and where to find local farm stands, farmers markets, and Maryland farms. The website includes farm contact information, directions, and video interviews with about 1,000 farmers, wineries, and small food processors.

Additionally, the 2020 Maryland's Best Ice Cream Trail promoted the state dairy sector and encouraged buyers to visit 10 dairy farms around Maryland that sell fresh, from-the-farm ice cream directly to consumers. As a COVID-19 precaution, the program decided to forego printed "Ice Cream Trail Passports," and instead asked participants to simply take selfies and share their visits to the ice cream farms.

MARYLAND'S BEST SEAFOOD

The Maryland's Best Seafood Program works to increase market share and consumer demand for Maryland seafood products. Efforts to achieve these goals utilize a marketing mix of advertising and consumer and industry promotions.

In FY21, Maryland's Best Seafood executed an aggressive advertising and promotional plan that aimed to increase sales for Maryland crabs, crab meat, oysters, rockfish, blue catfish, and lesser species. Promotional event marketing efforts focused on the entire seafood supply chain, from wholesale buyers and consumers and featured in-season Maryland seafood recipes and food samplings by well known Maryland chefs. The program also sponsored and promoted Maryland seafood at consumer and industry events including the Annapolis Oyster Fest, WTMD's Virtual First Thursday Concert Series, Keep Calm and Carry Out, Buy Local During Stay at

Home Order, Tides and Tunes, and many more.

The seafood advertising campaign for 2021 targeted Maryland consumers and wholesale buyers and featured a mix of radio, television, billboards, newspaper, social media and online outlets. Advertising artwork utilized Maryland's Best branding and highlighted in-season seafood products and where to buy them. In total, Maryland's Best Seafood messages reached over 14 million consumers through advertising in 2021.

True Blue Program. A key 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% of its crabmeat from Maryland. During 2021, MDA seafood marketing staff worked on confirming compliance with regulations to be part of the True Blue program. These efforts helped to increase the number of participants in the program, totalling over 70 certified True Blue restaurants and retailers at the end of the year. The department also distributed materials, including window clings, aprons, and hats, with True Blue branding.

Blue Catfish. Maryland's Best Seafood ran a high priority campaign to increase the consumption of and demand for the invasive Chesapeake Bay blue catfish. The blue catfish is a non-native species that has proliferated throughout the Chesapeake Bay and has had a negative impact on the ecosystem, outcompeting native species and feeding on blue crabs, rockfish, and more. The campaign included press releases, advertising, and sampling events in Baltimore, Annapolis, and Washington D.C.

MARYLAND FARM TO SCHOOL PROGRAM

The Healthy, Hunger-Free Kids Act of 2010. This act 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. The USDA conducted its third Farm to School Census in School Year 2018 -2019 to measure progress toward reaching this goal.

Maryland Homegrown School Lunch Week 2021. Governor Larry Hogan designated Oct. 19-23, 2020, as Maryland Homegrown School Lunch Week (HGSLW). In its 13th year, this annual promotion encourages Maryland schools to serve local food in lunches to show students where their food comes from and to introduce them to fresh, nutritious products made right here in Maryland.

Due to the COVID-19 pandemic, this year's edition of HGSLW shifted from in-person events at schools across the state to a virtual celebration. MDA's Farm to School Program provided a variety of activities that families could use to celebrate the week, including agritourism visits, recipes, lesson plans and information on where to find local products for at-home lunches. Participants were encouraged to share their celebrations of HGSLW on social media using hashtags #MDHGSLW and #MDKidsEatLocal.

HGSLW is an element of the Maryland Farm to School Program, which is administered in partnership by MDA and the Maryland State Department of Education. The program aims to bring locally-produced foods into schools, provide hands-on experiential learning to students, and integrate food-related education, while promoting the benefits of local, nutritious foods.

According to the 2019 USDA's Farm to School Census, Maryland schools spent over \$19 million on local foods in School Year 2018-2019. More than 80% of Maryland school food authorities serve local foods, and over 60% of Maryland schools participate in Farm to School activities such as nutrition education, taste testing, gardening and collaborating with local farmers.

PROJECT GREEN CLASSROOMS

The department is on the Leadership Team and Steering Committee for Gov. Hogan's Project Green Classrooms. Project Green Classrooms is an environmental education initiative committed to providing every Maryland child the opportunity to learn about their local environment, develop a connection with nature, and have a better sense of place in their natural surroundings. The initiative promotes outdoor experiential activities and environmental education through Maryland's schools, communities, and public lands. The initiative serves as an advisory body, working collectively across multiple disciplines and the public and private sector to identify gaps and barriers and to 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.

LINKING ENVIRONMENTAL AND ACADEMIC PROGRAMS

During FY21, MDA signed a Memorandum of Understanding (MOU) between the U.S. Environmental Protection Agency (EPA), the University of Maryland Eastern Shore (UMES), the Maryland Coastal Bays Program (MCBP), the Maryland Department of the Environment (MDE), and DNR. The

MOU is focused on increasing cooperation to advance and promote environmental and agricultural program activities, promote equal opportunity in higher education, contribute to the capacity of UMES to provide high-quality education, and encourage the participation of UMES in the nation's environmental programs.

USDA SPECIALITY CROP BLOCK GRANT PROGRAM (SCBGP)

The department's Marketing Program administers the USDA SCBGP funds. During FY21, MDA awarded \$432,653 to seven projects that enhanced the competitiveness of specialty crops in Maryland. The projects were selected after a competitive review process with MDA and an external review committee composed of representatives from the specialty crop industry, lending institutions, economic development, and producers. The SCBGP application process transitioned to Maryland's OneStop in FY21.

GOVERNOR'S ADVISORY COMMISSION ON MARYLAND WINE AND GRAPE GROWING

The Governor's Advisory Commission on Maryland Wine and Grape Growing was authorized in 2005. The commission advises the Maryland Wine and Grape Promotion Council on the allocation of funds from the Maryland Wine and Grape Promotion Fund.

MARYLAND WINE AND GRAPE PROMOTION FUND

The Maryland Wine and Grape Promotion Fund, also authorized in 2005, provides grants to non-governmental organizations to encourage the production and consumption of Maryland wine and to promote the production of wine grapes in the state. MDA administers grants from the Maryland Wine and Grape Promotion Fund. The Commission reviewed six applications totaling \$311,790 in requested funding with \$136,000 available in the Fund. The Commission recommended three projects totaling \$109,500 to be approved by the Maryland Secretary of Agriculture. The Secretary approved the recommendations from the Commission. The Fund's application process transitioned to Maryland's OneStop in FY21.

MARYLAND FARMERS MARKET PROGRAM

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

Participants in WIC and SFMNP also receive nutrition information and a participant brochure, which includes details on the program and a seasonality chart to help them shop for local, in-season produce.

MDA's FMNP runs every year from June 1 through November 30. In Maryland, 195 farmers participate in the FMNP annually. All of the 110 recognized markets in Maryland have authorized farmers present who participate in the FMNP. In 2019, 11,855 WIC recipients used their FMNP benefit with Maryland farmers, purchasing \$355,660 of fresh produce. Seniors used \$182,755 of this benefit with Maryland farmers.

MDA's FMNP also partnered with the UMD Extension's FSNE program to promote local produce to WIC families. Through this initiative, 522 tastings were conducted at farmers markets and more than 60,000 Maryland consumers received educational material on healthy eating.

FARMERS MARKET DIRECTORY

More than 60,000 printed Maryland Farmers Market Directories were distributed to the public through tourism offices, libraries, farmers markets, senior centers, WIC clinics, welcome centers, and other facilities. This directory includes all the farmers markets in the state recognized by the department. Maryland has farmers markets in all 23 counties and Baltimore City. The online version of the directory is also available on MDA's website and Maryland's Best website.

FARMS AND FAMILIES PROGRAM

MDA awarded Maryland Agriculture and Resourced Based Industry Corp. (MARBIDCO) \$100,000 for this program, which was in turn administered by the SMADC. Designed to increase buying power of limited-resource citizens at farmers markets, the program matches federal benefits programs, including WIC and SNAP, as well as MDA's Farmers Market Nutrition Program for seniors.

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). MDA is a member of the trade association through its membership in the Southern Association of State Departments of Agriculture. International Marketing was significantly impacted by COVID-19 restrictions on travel and trade during FY21. Work continued on connecting Maryland breweries to markets in Europe and Canada, but trade shows and hosting of international buyers did not happen.

AGRICULTURE MEDIATION

The Maryland Agricultural Conflict Resolution Service (ACRES) is funded by the USDA. It 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 has grown 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, 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 state law, 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, 2021, the program has funded 183 projects, which have provided 80,216 spay and neuter procedures across the state. Since the program's inception the amount of reported stray intakes of animals has decreased by 37% (this was an additional 20% decrease from 2019's 17% decrease since program inception and may be largely attributed to many shelters being shut down and the public staying at home and not finding stray animals) and the number of dogs and cats euthanized in Maryland animal shelters decreased by 64% (an additional 18% decreased from 2019's 46% decrease since program inception that may also be largely attributed to the shut downs). Due to shelter's being open for business again and the temporary shut down of many spay and neuter clinics during the spring of 2020 we anticipate some rebounding of numbers of intakes and euthanasia in 2021 but are optimistic that they will remain under that of 2019.

CERTIFIED LOCAL FARM ENTERPRISE PROGRAM

The Certified Local Farm Enterprise Program encourages state agencies, including public four-year universities, to achieve an overall goal of purchasing 20% of their food from certified local farm enterprises. The program, created in 2021, established a definition of "Certified Local Farm Enterprise" as a farm with a nutrient management plan. Approximately 70 farms became certified in 2021.

ANIMAL HEALTH AND DIAGNOSTIC LABS

ANIMAL HEALTH PROGRAM

MDA's Animal Health Program prevents and controls infectious and contagious diseases in Maryland livestock and poultry with particular emphasis on those diseases that threaten public health, endanger food supplies, or threaten the economic security of the animal industries. Staff members work closely with partners in the animal industries, including 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, Administration, Field Operations, and the Diagnostic Laboratory System. Administration has a staff of seven full-time employees at MDA's headquarters in Annapolis.

Field Operations currently has six full-time staff and one part-time staff member. The Diagnostic Laboratory System in Frederick and Salisbury employs 15 full-time staff, one part-time staff, two contractual front office staff, and two contractual relief veterinary pathologists. In FY21, due to COVID-19 absences, the USDA provided some relief veterinary pathologist services at both laboratories. They also provided field support for auction and exhibition inspections as well as Animal Disease Traceability Program enforcement. This additional assistance from the USDA was critical to maintaining Maryland's animal health operations.

Impacts from the COVID-19 pandemic continued to increase the workload for the Animal Health Program due to temporary closings and decreased services from surrounding states laboratories. MDA's entire Animal Health Program staff was deemed essential and staff dutifully conducted business as usual despite COVID-19 challenges. The field staff continued the mandate of protecting Maryland's food supply by conducting livestock auctions, premise inspections, and more. The caseload at both the Salisbury and Frederick Animal Health Diagnostic Laboratories increased due to surrounding laboratories decreased services. Program staff at MDA headquarters were able to transition to teleworking and continued their work from home.

In addition to routine or scheduled work, the Animal Health Program also responded to all animal emergencies under the State Emergency Operations Plan, Emergency Support Functions 6 and 16. Animal emergencies are categorized as animal health emergencies, such as a disease outbreak in livestock or poultry, or 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 Department of Emergency Management (MDEM) and the majority of Animal Health personnel are emergency essential employees due to the critical nature of animal emergency response.

The department has an 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 consultations, training, investigative support, and diagnostic evaluations of affected animals. MDA's Animal Health Program also has a MOU with DNR to provide diagnostic testing and necropsies for wildlife, and works collaboratively on wildlife disease surveillance, prevention, and outbreak concerns.

REGULATORY AND FIELD 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 in or out of Maryland must be examined for signs of contagious or infectious disease; have the required vaccines and disease testing; and be accompanied by a Certificate of Veterinary Inspection. In FY21, Animal Health Program staff processed certificates of movement for 65,570 livestock animals, including 14,232 horses and over 325 million poultry. The numbers are higher for livestock and poultry, possibly due to adjustments caused by the COVID-19 pandemic from early 2020.

Animal Exhibitions and Backyard Flocks. In FY21, Animal Health Program staff performed 34 inspections of exhibitions at shows. The COVID-19 pandemic continued to cause cancellation of fairs, but MDA staff inspected fairs that were held. With the help of federal partners, exhibition officials, and trained volunteers, MDA'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 virtually.

During FY21, Animal Health Program staff also continued outreach, inspection, and training in the backyard flock sector. This sector continues to increase in size and has a potential risk. The COVID-19 pandemic has led to a significant increase in the popularity of backyard flocks. In FY21, 722 additional backyard poultry flocks were registered, for a total of 8,061 backyard flocks. The Animal Health Program continued to identify, inspect, and regulate 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.

MDA's Animal Health Program is the National Poultry Improvement Plan's (NPIP) Official State Agency. Our active participation provides biosecurity and hatchery sanitation standards as well as on-site monitoring and testing to meet programmatic disease certification programs, interstate movement, or export requirements for commercial and backyard poultry. These disease surveillance programs, including avian influenza, salmonella species, and mycoplasma

species, safeguard the poultry industry from significant flock losses and protect food safety and public health.

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. Due to the COVID-19 pandemic, the Animal Health Program did not begin training and in-field certifications for independent or commercial Maryland Authorized Poultry Testing Agents until April 2021. Ultimately, three training sessions were done in FY21. As the state recovers from the COVID-19 pandemic, training and in-field certifications will continue in accordance with state COVID-19 guidelines.

Maryland regulations require, regardless of residency, all sellers of poultry or hatching eggs in the state to obtain a Maryland Permit to Sell. Maryland has 87 NPIP qualified premises with Permits to Sell. Although the NPIP Avian Influenza H5/H7 Clean Program remained voluntary for in-state sellers, most Maryland backyard NPIP participants elected to include the 180-day testing to maintain this status. Out-of-state sellers are required to show avian influenza negative test results and must show proof of flock of origin by a NPIP certification or a pullorum typhoid testing of the flock.

Livestock and Poultry Auctions and Dealers. During FY21, Animal Health Program staff inspected 254 livestock auctions held at four USDA/MDA 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, animal identification, and other market regulations. Disease surveillance is conducted for diseases of concern such as avian influenza or swine influenza. In FY21, 12 inspections were conducted for the 25 livestock dealers due to the COVID-19 pandemic. An additional 40 farm stores that sell chicks and ducklings in the spring were inspected. The premises were inspected for diseased animals, record-keeping compliance, and education regarding animal disease traceability.

Biologics. In FY21, the Animal Health Program evaluated 42 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 biological agents in Maryland. In addition, in FY21, the Animal Health Program worked with legislators, veterinarians, farmers, and constituents to revise laws and regulations for antibiotic use

in food animals. New state mandates prohibiting “Blanket Dry Cow Treatment” became effective this fiscal year, restricting use of antibiotics in dairy cattle without assessment of mastitis. Restrictions on use of antibiotics in food animals and compilation of data of the use of antibiotics in feed and water continued in FY21, with data provided in an annual report to the Maryland legislature in February 2021.

Contagious Equine Metritis (CEM) Import Quarantine Station. The department operates one USDA CEM Quarantine Import 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 FY21, the department issued 220 import permits through the CEM program, accruing \$185,200 in revenues.

Animal Disease Traceability (ADT) Program. Four livestock markets throughout the state continued to function as approved Livestock Tagging Stations. They are under combined USDA and MDA authority. This allows them to provide tagging and recordkeeping services to livestock producers at the market, facilitate interstate movement, and offer 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 FY21, to increase compliance with ADT requirements, there was additional outreach to producers, markets, veterinarians, and University of Maryland Extension officials promoting free radio-frequency identification tags (RFID) tags for market operators, veterinarians, and producers. The Animal Health Program continued its ADT policy requiring the use of RFID tags in animals entering exhibitions. This upgrade enables better and more efficient tracking of animals moving in, out, and throughout Maryland. 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 FY21, 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’ (SCS) 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 enables 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. Livestock premises registration is required for animals to move interstate. To date, property owners and operators with livestock have registered 128 new premises in Maryland for a total of 7,826 registered premises. 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, 8,061 poultry premises are registered under the state program, including 722 that were added in FY21.

Veterinarian Accreditation Program. The Animal Health Program in conjunction with the USDA Veterinary Services, trains and certifies licensed Maryland veterinarians to perform regulatory functions as agents of the state and federal government. Accredited Veterinarians provide Certificates of Veterinary Inspection to allow interstate and international animal movement, as well as to certify animals to enter exhibitions or for certain sales. In the event of a major disease outbreak, Accredited Veterinarians can assist government officials in animal testing and vaccination for disease control or eradication. They have been instrumental in eradicating or controlling important animal diseases affecting humans, including tuberculosis, brucellosis, and rabies. There are a total of 1,559 Accredited Veterinarians in Maryland, and all are required to have initial USDA and state-specific training. In FY21, the Animal Health Program in conjunction with USDA, conducted four accreditation classes and provided accreditation to 114 veterinarian participants.

EMERGENCY RESPONSE READINESS

The Animal Health Program continually prepares and trains for an emergency response. During FY21, 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. In FY21, program staff participated in one University of Delaware virtual emergency response exercise and two trainings primarily focused on HPAI response. Through continued training, department personnel are assigned and trained to respond to agricultural emergencies by utilizing the Incident Command System, the state WebEOC system, and the federal Emergency

Management Response System (EMRS). In addition, Animal Health Program personnel collaborated with MDH, the State Board of Veterinary Medical Examiners, MEMA, and the Maryland veterinary community to assemble the State Voluntary Veterinary Corps, a group of about 185 veterinarians and technicians willing to support emergency operations when activated.

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 funds 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 and throughout the Delmarva region. In FY21, with the continual threat of HPAI entering the United States, the department continued: enhanced surveillance at auction markets; required avian influenza testing of resident poultry entering exhibitions within 21 days of entry; and required testing of out-of-state poultry within 21 days of entry. MDA performed 6,134 avian influenza tests in FY21. The live virus was not detected in this testing.

Foreign Animal Disease. No foreign animal diseases were detected in Maryland during FY21. Four foreign animal disease investigations were conducted this fiscal year. The department has two qualified foreign animal disease diagnosticians on staff.

Tuberculosis and Brucellosis. Maryland remains free of bovine tuberculosis and swine brucellosis. In FY21, MDA performed 359 brucellosis surveillance tests in Maryland cattle and swine to continually monitor for these diseases as they are still found in the United States and therefore could be inadvertently imported into Maryland.

Equine Herpes Virus (EHV). The neurologic strain of EHV is a contagious and potentially fatal disease for 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 the spread of disease. In FY21, a total of 396 EHV-1 tests were performed by MDA labs. Of note, in spring 2021, a horse in a racetrack barn was determined to have a neuropathogenic strain of EHV-1. Consequently, EHV-1 tests were performed by MDA to clear 500 horses at risk of exposure to the affected horse. Of those tested, 45 horses were positive for the fatal neuropathogenic strain of EHV. Quarantines were placed on the premises and were lifted once all of the animals tested negative from two consecutive testing results.

Quarantines. As a result of disease surveillance and response efforts in FY21, 39 quarantines (hold orders) were placed. After being cleared, 39 quarantines were released on these farms. Additionally, there were 269 30-day quarantines issued for swine entering the state that were placed through the swine permit process. There were an additional 220 quarantine actions associated with 220 horses moving through the CEM Quarantine Import Station in Maryland.

Selected parameters of Animal Health activities are reflected on the chart below.

ANIMAL HEALTH PROGRAM FY 2021 – SELECTED PARAMETERS

Parameter	Total Number
Animals Certified to Move In, Out or Within Maryland/ Non Avian/Poultry	65,570
Avian/Poultry Total Animals - Export	90,283,084
Avian/Poultry Total Animals - Import	189,615,034
Biological Authorizations	42
CEM Permits (Quarantines)	220
Equine Health Certificate - Export	6,395
Equine Health Certificate - Import	3,016
Exhibition Inspections	34
Export Certificates (Non-Equine)	7,270
Foreign Animal Disease Investigations	4
Import Certificates (Non-Equine)	17,247
Inspections and Investigations - Total Combined	403
Intrastate Certificates Total (Show)	5,031
Livestock Dealer Licenses	50
Market Inspections	254
Quarantines Issued for Disease Investigations	39
Swine Permits Issued (Quarantines)	269

LABORATORY SYSTEM MISSIONS AND STAFF

MDA's Animal Health Laboratory System supports the animal and public health regulatory and emergency response missions of the department, 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. Examples include the diagnosis of certain high

consequence pathogens to support:

- National disease control programs of the USDA, e.g., avian influenza in poultry, tuberculosis in cattle, and brucellosis in swine;
- The U.S. Food and Drug Administration Center for Veterinary Medicine initiative to promote animal and human health by investigating potential biologic contaminants in animal feeds, animal products, or produce;

- MDH in diagnosing animal rabies and other animal diseases of public health significance; AND
- DNR in disease surveillance programs of wildlife diseases of concern, such as chronic wasting disease in deer and brucellosis in marine mammals.

Additionally, the system provides postmortem 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 daily 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 the Frederick and Salisbury Animal Health Diagnostic Laboratories are accredited by the American Association of Laboratory Accreditation, 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. In FY21, both labs passed the accreditation review with no deficiencies. Both labs are fully accredited for two years.

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 and Frederick labs are also NPIP laboratories, 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 MDH.

The laboratory system also provides educational and training opportunities to a diverse group of students, including students from the Virginia-Maryland Regional College of Veterinary Medicine, UMD, Salisbury University, and other U.S. colleges, universities, and veterinary schools. 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 postmortem 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 Animal Health Diagnostic 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 lab primarily serves constituents on the western shore of the state. The laboratory testing capability includes rabies, brucellosis, CEM, EHV, equine infectious anemia, Johnes disease, avian influenza, swine influenza, equine influenza, and exotic Newcastle disease. EHV 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 and the significant general equine industry. Swine influenza testing was added in FY19 to enable rapid detection and response to this disease in both laboratories, as it has twice affected Maryland fairs and shows and can be contagious to humans. Avian influenza testing of poultry was added to the Frederick lab's mission in FY11 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. Equine influenza testing was added in FY21 to better serve the equine industry and to be prepared for a possible disease outbreak of this important disease.

The primary mission of the Salisbury Animal Health Diagnostic Laboratory focuses on infectious diseases of poultry within Maryland. The Salisbury lab 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 diseases 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 Salisbury laboratory has a large 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 mycoplasma diseases. The facility has 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. In FY21, construction began of a new laboratory to replace the aging existing laboratory in Salisbury, and the new laboratory facility is expected to open in February 2022.

ANIMAL HEALTH PROGRAM LABORATORY STATISTICS: FY19 VS. FY20

Diagnostic Activity	FY19	FY20	FY21
Total Accessions	13,209	11,926	14,120
Total Tests	48,899	41,277	43,343
Mammalian Necropsy	234	259	175
Poultry Necropsies (flocks)	526	558	874
Avian Influenza	6,746	6,209	6,134
Brucellosis	1,123	462	359
Contagious Equine Metritis	2,015	2,161	2,206
Equine Herpes Virus (EHV-1)	6	96	396
Equine Infectious Anemia	8,786	7,364	8,184
Johne's Disease in Cattle	2,445	1,847	2,009
Rabies	114	63	68
Salmonella Pullorum	1,382	1,758	3,470

Note: This is a summary of testing carried out in FY19, FY20 and FY21 at the department's Animal Health Diagnostic Laboratories for regulatory or otherwise select significant diseases.

STATE BOARD OF VETERINARY MEDICAL EXAMINERS

The State Board of Veterinary Medical Examiners mission is to protect animal and public health and welfare 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 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: mda.maryland.gov/vetboard.

LICENSES

In FY21, the board issued the following:

- Number of New Veterinarian Licenses: 158
- Number of Veterinarians License Renewals: 2,841
- Number of New Registered Veterinary Technicians (RVTs) Licenses: 77*
- Number of Registered Veterinary Technicians (RVTs) License Renewals: 173*
- Number of New Veterinary Hospitals Licenses: 60**
- Number of Veterinary Hospitals License Renewals: 531
- Animal Control Facilities Licensed: 31

*Note: RVT licenses are good for three years.

**Note: Many new hospital licenses represent ownership changes rather than brand new facilities being built.

INSPECTIONS

The board shares two inspectors with the Maryland Horse Industry Board (MHIB). Together, they inspect nearly 600 veterinary hospitals and 750 licensed horse stables at least once every two years. Inspections during FY20 were suspended during the stay-at-home directive that lasted from March 2020 to May 2021.

Inspections during FY21 were as follows:

- Number of Hospitals Inspected: 417
- Number of Hospitals Requiring Follow-up Before Passing: 55
- Number of Total Inspections Conducted: 472

COMPLAINTS

During FY21, the board closed 105 complaints, compared to 82 in the previous year. These complaints include infractions found by board inspectors during hospital inspections that were serious enough to warrant board attention. A total of 45 complaints were referred to the OAG for action. At year end, the board had 78 open complaints. Of those, 46 were under investigation, 19 were pending with the OAG, and 13 were pending final board action.

MARYLAND HORSE INDUSTRY BOARD

The MHIB consists of the Maryland 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 FY21, Dr. Justin Sobota of South Mountain Equine in Frederick County was appointed to fill the term vacated by Dr. Michael Odian, who represented licensed veterinarians. Dr. Odian resigned from the board to take the position as State Veterinarian for MDA's Animal Health Program. The board upheld safety and health protocols throughout FY21 due to the COVID-19 pandemic. The board held 11 monthly meetings via teleconference. Despite obstacles posed by the COVID-19 pandemic, the board maintained a robust stable licensing program and equine promotions and marketing schedule.

Key accomplishments for FY21 include:

- Overseeing licensing of 782 boarding, lesson, rental, and rescue stables. The pandemic led to an increase in interest in outdoors activities, including horseback riding and other equestrian activities. A survey of stables showed an uptick in business, principally in lessons, trail riding, and horse equipment sales.

- Holding the first Maryland Horse Month in October 2020 with industry partners and the Maryland Office of Tourism Development. Throughout October, major horse races like the Preakness Stakes, held for the first time in the fall, and the Jim McKay Maryland Million Day were successfully held without spectators and the Maryland 5 Star at Fair Hill offered a virtual presentation on Maryland Public Television and other media platforms.
- Distributing \$29,700 in grants to 40 industry organizations and individuals.
- Instead of hosting an in-person Maryland Horse Industry Day in Annapolis for state lawmakers, MHIB produced a promotional flier showing industry updates and achievements that was distributed to legislators and appeared as full-page ads in trade publications.
- Continued to help ease and clarify horsemen's concerns emphasizing strict safety procedures during the gradual re-opening of the state's equine businesses.

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 MHIB 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 MHIB in FY21 are listed below.

- **Licensing and the Feed Fund Program.** The MHIB licensed 782 stables in FY21. This figure represents the highest number of stables licensed by the board and a 7% increase from the previous year. Despite the pandemic and the fear that there would be a decrease in feed sales, the board collected \$213,444 from its Feed Fund program. The fund stayed steady and showed an increase over the five-year average of quarterly feed payments.
- **Continued Involvement in the Development of the Fair Hill Special Events Zone.** Jay Griswold is the MHIB representative on the 14-member Fair Hill Foundation Board, the private entity raising funds for infrastructure improvements at the state-owned facility. Griswold now serves as its Co-Chair Emeritus. Through July 2021, the foundation raised nearly \$4 million, which was paid to the state and to various other entities for infrastructure costs, such as the new 5 Star cross country course. COVID-19 restrictions interrupted fundraising activities during FY21 and led to the Fair Hill Races being postponed. Despite the pandemic, the campaign kept in touch with donors and practiced socially-distanced individual tours to fundraising prospects. Griswold also served on the Fair Hill Host Organizing Committee, which

has oversight of the new Maryland 5 Star at Fair Hill. MHIB Executive Director Ross Peddicord also serves as an ex officio (non-voting) member of the foundation and the Host Organizing Committee. Griswold and Peddicord both attended the Fédération Equestre Internationale (FEI) Fair Hill 5 Star Test Event in August 2020. The 5 Star was scheduled to take place in person in October 2021. MHIB signed on as a blue ribbon sponsor and helped plan special events, such as the Horseland tent activities for the general public and an equestrian-themed military/first responders exhibit. MHIB also helped in identifying 5 Star sponsors and Fair Hill Foundation donors.

- **Development of the first Maryland Horse Month.** Gov. Hogan proclaimed October 2020 as Maryland Horse Month recognizing the abundant historic, recreational, therapeutic, and economic contributions made by the state's horse industry. Additionally, 2020 was the first year that all of Maryland's premiere equestrian sporting events, including the Preakness Stakes, Jim McKay Maryland Million Day, and the virtual Maryland 5 Star at Fair Hill were held in the same month due to scheduling changes in response to COVID-19. MHIB expanded its partnership with the Maryland Office of Tourism Development, which dedicated a section of the Visit Maryland website to equestrian activities. MHIB has produced the following seven travel collections for the Visit Maryland website: Western Maryland, Maryland's Eastern Shore, Cecil County, Harford County, Howard County, Baltimore County, and Baltimore City. These collections include Horse Discovery Centers, equestrian competition venues, restaurants, and other attractions that are horse-themed and open to the general public. Eventually the whole state will be covered. Due to the COVID-19 pandemic, promotion of the inaugural Maryland Horse Month was primarily through social media, a Maryland Horse Month Facebook page, the Visit Maryland website, the Maryland Horse Foundation's website, Maryland Public Television's digital platforms, and news articles. The Maryland Office of Tourism Development received 12,052 Facebook likes, 11,408 Twitter impressions, and 31,939 Instagram impressions for their Maryland Horse Month content. The Maryland Horse Month Facebook page reached 28,195 people. Maryland Public Television had 28,674 social engagements pertaining to Maryland Horse Month and the Maryland Horse Foundation's website received 146,407 visits in October.

MHIB STRATEGIC MARKETING PLAN

The MHIB continued to implement its strategic marketing plan, pivoting from in-person to virtual events. Key strategic marketing plan components and updates for FY21 are as follows.

Maryland's Horse Discovery Center (HDC) Program and the Affiliated Horse School Curriculum, "Horses for Courses," Continue to Mature.

Four new HDCs were certified in Baltimore, Frederick, Carroll, and Anne Arundel counties, and four HDCs withdrew from the program, located in Baltimore, Carroll, and Frederick counties. There are now 40 HDCs in 18 counties across the state. Programming from most centers was conducted virtually. Camp Letts Equestrian Center produced 16 videos/podcasts based on the MHIB "Horses For Courses" curriculum. There was an occasional in-person event, such as the Rose of Sharon Equestrian School's "Preakness at Blakehurst," a visit with miniature horses to an assisted living facility. MHIB Field Marketing Specialist Anne Litz conducted four virtual regional meetings of the HDC network to maintain contact and produced monthly newsletters on HDC activities.

MHIB's Touch of Class Award. During FY21, MHIB honored Maryland horses and riders who won national and international recognition with the monthly Touch of Class Award in these disciplines: equine literature, rodeo, steeplechasing, dressage, jousting, Thoroughbred racing, and one Marylander who was recognized as a World Champion blacksmith.

MHIB Engagement on Social Media. At the end of FY21, MHIB had 5,417 Facebook and 526 Instagram followers. MHIB has not received much engagement on Twitter so the board has slowed activity on that platform.

MHIB in the News. In FY21, two Baltimore news stations aired segments about MHIB activities, one hosted by Jennifer Franciotti on WBAL-TV and the other by Denise Koch on WJZ-TV.

Producing and Distributing Promotional Materials. Promotional materials are available at Maryland welcome centers around the state, Clark's Elioak Farm in Ellicott City, HDCs, and major tourism centers. All publications produced by the board can be downloaded on the MHIB website. MHIB participated in a full page ad in *Destination Maryland*, the State's official tourism magazine; and advertised trail riding opportunities in the *Baltimore County Tourism Guide* and *Recreation News*.

MHIB-Produced Educational Webinars Kept Stable Owners Informed During COVID-19 Pandemic. MHIB produced two well-attended webinars to keep Maryland stable owners up to date on health and safety protocols and changes to their operations due to the COVID-19 pandemic. Each webinar had over 100 participants and addressed the following topics: best practices for managing horse stables and managing equestrian summer camps during the COVID-19 pandemic. Additionally, MHIB, MDA's Office of Resource Conservation, and UMD, hosted a webinar on removal and composting of horse manure. This webinar drew over 140 participants.

MHIB's National and International Outreach Was Paused. A scheduled trade mission, sponsored by U.S. Livestock Genetics Export (USLGE), to the Euro Paint Horse Expo in Germany was put on hold until COVID-19 pandemic travel restrictions ease. MHIB was planning to showcase the breeding operation of Harris Paints in Caroline County at the expo. MHIB continued international outreach through the Maryland Sister States program, a program housed within Maryland's Office of the Secretary of State. MHIB's International Representative Bob Zhang continued to maintain a close relationship with Maryland's Sister States in China and France.

MHIB Sponsorship for Seven Equine Projects. During FY21, MHIB provided sponsorships for the following projects: Hope's Legacy, an equestrian-themed movie filmed in Maryland; the Equi-Fest Horse Rescue Day; formation of a new horse association geared toward increasing involvement in the equine industry from Asian Americans; the Foxcatcher 100-Mile Endurance Ride; Fair Hill International; the Maryland 5 Star at Fair Hill; and the Lisbon Horse Parade.

MHIB Participated in over 50 Maryland Horse Industry Events. During FY21, MHIB participated in the following events either in person or virtually: six Horse Talk events; a Maryland Tourism Development Board quarterly meeting; six regular Maryland Office of Tourism Development meetings; four Maryland Horse Council quarterly meetings; the Meadowbrook Stables Indoor Arena grand opening; the Professional Association of Therapeutic Horsemanship International (PATH) regional conference; two MARBIDCO meetings; six Maryland Sister States virtual meetings; four Maryland Association of Rescues and Equine Sanctuaries (MARES) virtual meetings; twelve Fair Hill Host Organizing Committee monthly virtual meetings; eight Fair Hill Foundation meetings; four Leadership Circle; and a SMADC monthly meeting for a Touch of Class presentation; and more.

MHIB Awarded 40 Grants. MHIB distributed \$29,700 in grant funding to 40 Maryland horse organizations and individuals.

This was on par with recent years despite the COVID-19 pandemic.

Cross-Disciplinary Cooperation. MHIB continued coordinating meetings with the Maryland Horse Industry Marketing/Leadership Circle, both virtually and in person.

MHIB SELECTED STATISTICS: 2021

Category	
Number of Stable Licenses Issued	782
Number of Inspections Performed Annually	567
Percentage of Facilities Inspected and Brought into Compliance	100%
Revenue Collected from Licensing Horse Stables in Maryland	\$103,625
Revenue Collected from Assessment Based on Tons of Horse Feed Sold in Maryland	\$213,444
Outcomes	
Total Amount of Money Distributed as Grants for Promotional, Educational, or Research Projects for the Maryland Horse Industry	\$29,700
Percentage of Total Revenue Distributed as Grants for Maryland Horse Industry	14%
Presented Talks at Meetings and Conferences Promoting Maryland Equine	56

FOOD QUALITY ASSURANCE

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’s graders sample commodities and compare them with standards developed by the USDA and/or MDA for microbial, chemical, and physical contamination as well as for 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. Services provided are considered essential support of critical infrastructure and

the program has been able to cover all requests for service throughout the COVID-19 pandemic. A cost-effective and service-oriented grading program is crucial for Maryland producers in meeting buyer requirements competing in export markets.

This year, the primary commodities graded by the program were:

- 172 million pounds of poultry;
- 14.4 million dozen of shell eggs;
- 15.5 million pounds of meat;
- 11 million pounds of vegetables; AND
- 172,000 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 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. However due to COVID-19 pandemic, the number of growers requesting a GAP audit for FY21 decreased to 30. 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.

MDA's Food Quality Assurance Program has been funded to date through the USDA Specialty Crop Block Grant Program and has provided food safety training to over 1,600 fruit and vegetable producers. An additional 28 fruit and vegetable producers were audited by program compliance auditors and received USDA GAP certification. MDA's GAP program requirements continue to be revised as the requirements of the FDA Food Safety Modernization Act (FSMA) Produce Safety Rule change.

FSMA PRODUCE SAFETY RULE

MDA completed the fifth 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 Safety Rule. MDA, UMD Plant Sciences Department, UME, and the UMD 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 mail, informational meetings, and attendance at various grower meetings.

Technical assistance was provided to growers through conducting 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 MDA regulator, one UMD specialist, and one local UME representative. The team evaluates a growers' compliance with the FSMA Produce Safety Rule and provides growers with notes on what complies and areas that need improvement. The produce grower is given resources to assist in correcting any potential problem areas. The program was only able to conduct one in-person On-Farm Readiness Reviews as planned in 2021. This number was extremely low due to COVID-19 restrictions and producers' hesitancy to have people on the farm during the pandemic. Assistance was provided to farmers virtually in lieu of in-person reviews.

The FDA-approved Produce Safety Alliance Produce Safety Rule Course was held regionally to assist produce growers in meeting the FDA-mandated training requirements. To date, MDA has provided the FDA-mandated training to 373 produce growers.

MDA is conducting inspections and enforcement under state authority in lieu of the FDA enforcing the FSMA Produce Safety Rule. The FDA continues to fund the program, but will not inspect or enforce the Produce Safety Rule unless a Maryland grower is implicated in an interstate food-borne illness outbreak. MDA conducted four inspections of produce growers with more than \$500,000 in fruit and vegetable sales before the COVID-19 restrictions and FDA stop work order were issued. All inspected farms had an On-Farm Readiness Review prior to inspection and there were very few observations of deficiencies that needed correction. Once the FDA stop work order was lifted, MDA was able to conduct an additional two inspections in 2021. To date, MDA has conducted 28 Produce Safety Rule inspections.

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 \$0.0026 per dozen eggs sold in Maryland.

The percentage of sampled eggs in compliance with the Maryland Egg Law was 90% with no change from last year. The number of lots inspected decreased as inspections at retail and food service locations were on a complaint basis due to COVID-19 restrictions that took effect in March 2020.

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

ORGANIC CERTIFICATION

The USDA-accredited Maryland Organic Certification Program certified 105 farms and handlers of organic products during FY21. The program also registered an additional four 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 Organic Certification Cost Share Program funded by the USDA. This program allowed MDA to reimburse 50% of the fee 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. In FY21, MDA licensed 58 businesses with 86 locations.

POULTRY AND RABBIT SLAUGHTER

The Poultry and Rabbit Slaughter Program assists small poultry and rabbit producers in Maryland in meeting the MDH-approved source requirements and allows them to market their products to restaurants, at farmers markets, and at other locations in the state. The program consists of food safety training, basic food safety requirements during slaughter, and inspections to verify that good food safety practices are followed. MDA certifies producers who follow the requirements. The required in-person training was canceled as a result of COVID-19 restrictions. Requests for the training and certification increased significantly as local producers were attempting to fill gaps in the food supply. The program developed a virtual training that is offered to producers, which allowed additional small poultry and rabbit producers to become certified to market their products. The virtual training is now available anytime online.

WEIGHTS AND MEASURES

The regulation of Weights and Measures is one of the oldest continual functions of government. MDA's Weights and Measures Program ensures that consumers get what they pay for, whether it be a gallon of gasoline, a truckload of gravel, or a pound of hamburger meat. 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.

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

Maryland's Metrology Laboratory is recognized by the National Institute of Standards and Technology (NIST) Office of Weights and Measures Metrology (OWMM). The program has one full-time meteorologist who is recognized as a signatory with NIST OWMM. The program's goal is to increase its laboratory calibrating scope as additional laboratories are upgraded.

The 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 NCWM. 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.

There are a total of 60,541 weighing and measuring devices in commercial use in Maryland at 7,732 separate business locations. The department has 18 inspectors who are specially trained and certified to test and inspect these devices according to established protocols ensuring 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.

MODERNIZATION

The program has built a database that tracks registration of approximately 6,340 businesses across the state and is now using electronic inspection software instead of paper reports. With these new tools, staff is able to quickly locate information and target critical areas, while field inspectors are able to plan inspections more strategically, reducing travel time, and providing more uniform inspection coverage statewide.

By modernizing its operations, the program has become more efficient and cost-effective in its mission to better protect Maryland consumers while maintaining a level playing field for industries that operate in the state.

The program is currently in the process of replacing aging lab and field equipment necessary to carry out the program’s

responsibilities and improve the efficiency of the program. The field and laboratory programs rely on special funds for these upgrades.

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 it was in the past, and continues to provide a vital service to consumers and businesses alike.

FY21 ACTIVITY

In FY21, the program’s field staff conducted 45,647 device inspections. Inspectors also tested 293 individual lots of prepackaged commodities.

In FY21, field staff investigated 168 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.

WEIGHTS AND MEASURES ACTIVITY TABLE: LABORATORY EFFORT

Inspection and Test	2019		2020		2021	
	% Rejected	# Tested	% Rejected	# Tested	% Rejected	# Tested
Weights	16	952	10	890	14.1	857
Volumetric Measures, (Non-Glass)	97	69	65	20	79.7	69
Length Devices	0	0	0	0	0	0
Temperature Devices	0	0	0	0	0	0
Timing Devices	0	0	0	0	0	0
Volumetric (Glass)	0	0	0	0	0	0
Scales/Meters	0	0	0	0	0	0
Standard Grain Samples	N/A	146	N/A	132	N/A	132

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

WEIGHTS AND MEASURES ACTIVITY TABLE: FIELD INSPECTION AND TEST EFFORT

Activity	2019		2020		2021	
	% Violations	Total Tests	% Violations	Total Tests	% Violations	Total Tests
Weighing Systems						
Large Scales	16.3	650	14.4	654	14.7	812
Medium Scales	14.7	455	15	373	8.1	62
Small Scales	13.7	7,201	11.3	3,102	5.6	567
Liquid Measuring Systems						
Retail Gasoline Meters	19.2	17,505	19.9	11,355	18.3	43,984
L P Gas Meters	16.7	245	9.1	88	2.8	36
Vehicle Tank Meters and Other Large Meters	12.6	800	14	972	25	4
Grain Moisture Meters	3.4	89	0	0	3.4	166
Programmed Tare Inspections	12.4	1,975	14.8	1,657	2.5	281
Price Scanning and Method of Sale	14.3	1,729	7.3	1,060	4.5	198
Delivery Ticket Inspections	0.3	2,109	0	2,107	0	50
Package Lots	16.4	5,114	18.8	1,163	28.6	293

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

Note: Due to the COVID-19 pandemic, all program operations were halted from March 16 - July 5, 2020. All program operations resumed on July 6, 2020 while concentrating mostly on outdoor inspections.

WEIGHTS AND MEASURES ACTIVITY TABLE: ADMINISTRATIVE CONTROLS AND MISCELLANEOUS

Activity	2019	2020	2021
Weighing and Measuring Devices Registration Certificates Issued	6,686	6,604	6,340
Type Evaluation of Devices Conducted (NTEP)	13	8	11
Citizen Complaints Received and Investigated	325	257	168
Disciplinary Hearings, Criminal Arrests, Summonses Obtained and/or Civil Penalties	2	1	3

Note: 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.

MARYLAND AGRICULTURAL FAIR BOARD

The Maryland Agricultural Fair Board was established in 1937. Originally known as the Maryland State Fair Board, the office was based at the Maryland State Fairgrounds in Timonium. When MDA was established in the 1970s, the office was moved to Annapolis and renamed the Maryland Agricultural Fair Board.

The board consists of eight members appointed by the Governor. Term of office is five years and a member may serve a maximum of two terms. A member 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 email. Most meetings are held at MDA's headquarters.

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 around the state. These events include: the Maryland State Fair, county fairs, local community shows, youth activities in 4-H and FFA, and more.

Every year, the board publishes the "Maryland Agricultural Fairs & Shows Brochure," an annual guide listing fairs and shows that the board funds. These brochures are distributed at welcome centers on state highways, extension offices, fairs and shows, chambers of commerce, libraries, county farm bureaus, and the Maryland Farm Bureau office. Due to the COVID-19 pandemic, the brochure was not printed in FY21 and was instead published on the department's website.

Racing revenue continues to be in flux and this affects the grants given out by the board. The board holds regional budget meetings throughout the state where they meet with each group to review requests, financial reports, and fair activities.

FY21 FINAL BUDGET FIGURES

0100	Personnel Costs	\$35,033
0300	Communication Costs	\$217
0400	Travel	\$0
0700	Motor Vehicle Operations	\$0
0800	Contractual Services	\$0
0900	Supplies & Materials	\$0
1036	Replacement Equipment	\$0
1207	Grants to Non-Government Entities	\$350,985
1299	Grants, Subsidies & Contributions	\$526,127
1300	Fixed Charges	\$93
TOTAL APPROPRIATION		\$912,455



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PLANT PROTECTION AND WEED MANAGEMENT

Due to the seasonal nature of this program and calendar year federal reporting requirements, data reported in this section is from the 2020 calendar year.

APIARY INSPECTION

MDA's Apiary Inspection Program works with beekeepers to control honey bee diseases, parasitic mites, and other pests in order to maintain healthy colonies for the pollination of Maryland crops. Honey bees 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 honey bee colonies.

American Foulbrood. American foulbrood is the most serious brood disease of honey bees and can destroy a colony in one year. In 2020, American foulbrood was confirmed in two bee colonies in Maryland. These two beehives were inspected by MDA, diagnosed by the USDA Bee Laboratory, and destroyed to prevent the spread of this contagious bacterial disease. The incidence of disease remains low, 0.05% of the colonies inspected in 2020.

Canine Training and Certification. In 2015, the apiary program trained and certified a dog and handler to detect American foulbrood disease in Maryland's honey bee colonies. In December 2018, a second dog was certified to inspect beehives for the presence of American foulbrood. Early detection of the disease saves Maryland beekeepers substantial monetary loss due to eradication of diseased colonies and destruction of infected equipment. A trained canine can inspect 100 honey bee colonies in 10 minutes, while an average human inspector can inspect 50 colonies in one day.

The department's two disease detector dogs inspect beehives during the fall and winter months when temperatures are



Mack and Tukka with MDA's Chief Apiary Inspector Cybil Preston (top), and inspecting beehives for disease (bottom). Photos by Bryanna Jeannette Ostendorf

below 52 degrees and bees are dormant. In 2020, MDA's two trained canines inspected a total of 2,089 colonies and certified them free of American foulbrood.

Varroa Mite (*Varroa destructor*). Varroa mite populations were again very high in Maryland in 2020, and brood problems and hive death are attributed to this pest. A serious problem caused by varroa mite is the transmission of viruses that can be fatal to the hive. Ten prevalent honey bee viruses have been discovered and the majority have an association with varroa mites. Therefore, controlling varroa mite populations in a hive will often control both the associated viruses and symptoms of the viral diseases.

Africanized Honey Bees (AHB). The department works with the Apiary Inspectors of America (AIA) to provide information to the general public about emergency incidents and the control of AHB movement through natural spread. MDA continues to work with the Port of Baltimore for onsite eradication of all swarms.

Small Hive Beetle (*Aethina tumida*). The small hive beetle was originally detected in packaged bees and either reported or detected in all 23 counties in 2019. 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. With increased rainfall totals and cooler temperatures in the spring, summer, and fall, there was an increase in the small hive beetle population found in Maryland beekeepers' hives.

Apiary Inspection Permits. Due to COVID-19 restrictions, the number of entry and exit inspections and permits slightly decreased. In 2020, entry permits were issued for 3,190 honey bee colonies to move into Maryland for overwintering and beekeeper purchase. Exit permits were issued for 2,000 colonies to move out of Maryland, primarily for pollination services. For the 13th year, Maryland beekeepers have sent colonies to California for almond pollination. About 2,400 colonies were transported to California in winter 2020 for the 2021 almond pollination season.

Surveys. The Apiary Inspection Program assisted with the USDA APHIS 2020 National Honey Bee Survey. The program completed 23 of the 24 samples despite limited surveying time during the COVID-19 pandemic. Additionally, the program participated in the Asian Giant Hornet/Invasive Survey.

Asian Giant Hornet Concerns and Actions. In 2020, there were confirmed sightings of the invasive Asian giant hornet

in Washington State and Canada. Due to the massive media coverage of these events, Maryland residents were hyper-vigilant in looking for this pest. The program received approximately 1,500 emails and over 300 phone calls from concerned Marylanders requesting identification of all types of large yellow and black insects. Fortunately, there were no Asian giant hornets reported. The program, however, identified more than a dozen other insect species that partially resemble the Asian giant hornet.

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 agriculture. The USDA (USDA) 2017 Census of Agriculture found that Maryland's nursery, greenhouse, floriculture, and sod sector had the third highest sales of commodities in the state's agriculture industry, generating more than \$230 million in sales in 2017.

A primary goal of the state's 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 MDA's Plant Protection and Weed Management nursery inspection 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 detrimental 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.

Inspections and Certifications. In 2020, the Maryland nursery inspection staff licensed 297 nurseries and 1,456 plant dealers and plant brokers. The staff also certified 10,537 acres of nursery stock and 12,070,024 square feet of greenhouse production. Plant Protection and Weed Management staff performed routine inspections at 1,512 Maryland locations.

Shipping Inspections and Certifications. In general, the health of Maryland-produced nursery stock was found to be excellent. Additional certification activities for 2020 involved shipment specific inspections. These included 148 state phytosanitary certificates issued to 17 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 2020, 32 shipment specific inspections were performed and federal phytosanitary certificates were issued to export Maryland-grown and produced plant material and grain to seven countries. These inspections and certificates ensure that Maryland-produced agricultural commodities meet international quarantine regulations. In 2020, with the help of USDA, the Maryland Nursery Inspection Program was able to move to an online format for processing state phytosanitary certificates, similar to the system used for processing federal phytosanitary certificates.

Online Nursery Sales. The fast-paced nature of online nursery product sales has been an ongoing challenge for the program. Throughout 2020, program staff worked hard to educate businesses interested in nursery ecommerce about the rules, regulations, and restrictions of other states. This effort has led to the development of several specifically-tailored compliance agreements, allowing for the quicker movement of nursery stock without inspections per shipment when permitted by the receiving state.

Boxwood Blight (*Cylindrocladium buxicola*). Efforts to prevent further introduction and to slow the spread of boxwood blight in the Maryland nursery and landscape industry continued throughout 2020. 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.

***Phytophthora ramorum*.** In 2020, the nursery inspection staff participated in the *Phytophthora ramorum* survey, looking for the plant pathogen which causes sudden oak death. Staff inspected 21 locations in Maryland and collected a total of 23 samples, which were submitted to the UMD Plant Pathology Laboratory. All samples were confirmed negative in 2020.

There were detections of two federally-regulated diseases in 2020 that involved Maryland nurseries: *Ralstonia solanacearum* race 3 biovar 2 and *Puccinia horiana*, also known as chrysanthemum white rust. Nursery inspection staff followed up on all trace forwards received by conducting inspections, sampling, testing, and assisting in eradication efforts. In addition, staff conducted a survey of tomato plants at Maryland facilities at the request of the USDA APHIS Plant Protection and Quarantine (PPQ) program. This involved

inspecting plants for symptoms of tomato brown rugose fruit virus and taking samples as needed.

Evaluating USDA Permits. Maryland Nursery Inspection Program staff continued their role evaluating federal USDA permits to move plant material (post-entry) 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. MDA 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 also site visits and follow-up inspections performed by the department.

Educating the Green Industry. Distribution of information to the green industry regarding enforcement of invasive plant regulations that took effect in 2016 has proven to be a challenge for program staff. Educating, providing outreach, inspections, and enforcement of these regulations has become very time consuming and more demanding. Online sales have made enforcement even more difficult.

Preventing the Spread of Insect Pests and Plant Diseases. Program staff continued to participate in virtual Maryland

Invasive Species Council and Invasive Plant Advisory Committee Meetings. Program staff also continued to be vigilant and participate in inspections and surveys aimed at early detection and slowing the spread of serious pests and diseases. Insect pest threats, such as the Asian longhorned beetle and spotted lanternfly (SLF), and plant diseases, like thousand cankers disease of walnuts, are considered high-risk in Maryland. In 2020, MDA staff used the remote imagery via small unmanned aircraft systems to detect spotted lanternfly presence in trees and also to evaluate aerial insecticide treatments applied to forests.



Aerial drone photo taken from the department's PPWM staff Deborah Hayes.

Continuing Education Opportunities for Program Staff. In 2020, staff members participated in virtual classes and other meetings proven to assist with daily regulatory duties. Virtual CLEAR training through the National Plant Board and USDA was offered to those unable to attend in 2019. The training was welcomed by all staff, including our newly hired inspector. It was informative, covering many aspects of regulated industries, and staff have since been able to incorporate some of the information presented into the enforcement process here at MDA.

Hemp Regulations. PPWM staff began the process of learning about hemp regulations in anticipation of those licensed facilities requesting phytosanitary certification for shipping.

Certified Professional Horticulturist Exam. Considerable time was spent assisting the Maryland Nursery, Landscape, and Greenhouse Association (MNLGA) and others in getting the Certified Professional Horticulturist (CPH) exam online. Previously, this exam was held at MDA's headquarters biannually. The online format is expected to begin sometime in 2021 and will be offered online at set times throughout the year.

Compliance. Field and clerical staff worked year-round to ensure that licensing and compliance regulatory statutes were met by the industry.

PEST SURVEY

The Cooperative Agricultural Pest Survey (CAPS) and Plant Protection Act surveys are joint projects between MDA and the USDA APHIS 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 ready for export to many countries, and also allow for continued outreach and education.

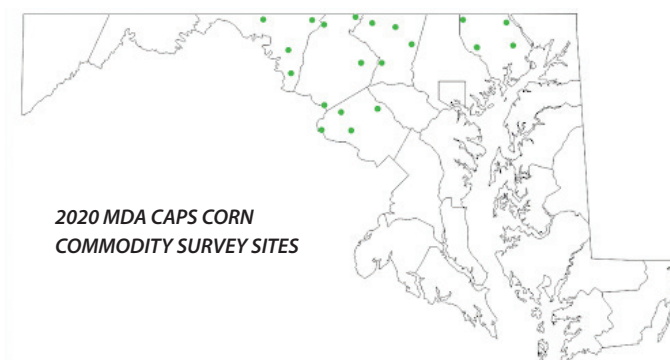
CAPS and Plant Protection Act surveys document the presence or absence of exotic pests in Maryland; support USDA APHIS PPQ exotic pest survey activities; and provide state-specific data for exotic pests in the U.S. Early detection of exotic pests before they become established helps in eradication/control efforts and protects Maryland agriculture, nursery stock, and the environment from potential devastating losses. Federally-funded CAPS surveys include: corn commodity, exotic wood borers, and imported fire ants. In Maryland, Plant Protection Act surveys focused solely on the invasive SLF.

In 2020, MDA deployed and monitored 216 insect traps and collected 1,727 samples. There were seven extensive surveys

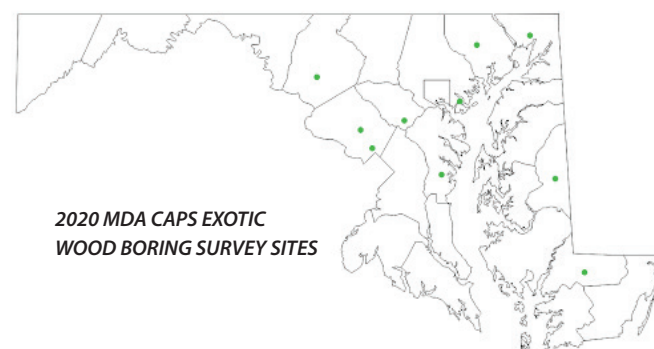
targeting 26 exotic pests that impact apiaries, fields, forests, orchards, and nursery stock.

CAPS SURVEYS

Corn Commodity. Corn is one of the most valuable crops grown in Maryland. Ensuring that our state is free of exotic pests is critical to the success of this commodity. This survey was conducted from June through October in five counties known to have high production rates of corn, based on harvested acreage in previous years. Four exotic moth pests were targeted in this survey. Throughout the sampling period, none of the targeted pests were reported.



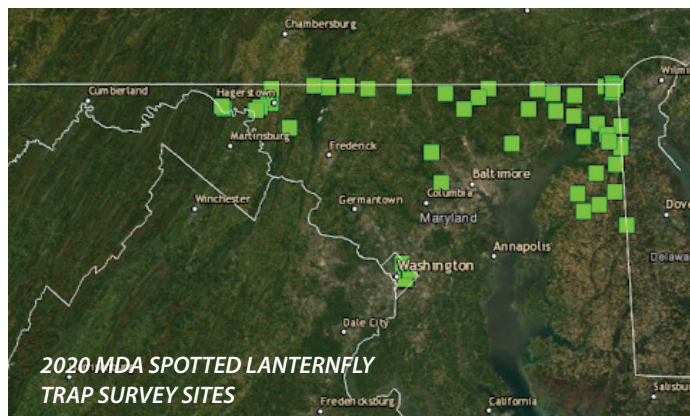
Exotic Wood Boring Beetles. USDA regulations require all imported wood packing material to be treated so that any insect living in the wood will be killed. However, some packing materials are not properly treated, which can cause exotic wood borers to be shipped to the U.S. and thus be introduced into our environment. Bark beetles can be extremely destructive and in some parts of the world they have destroyed large acreages of forests. In 2020, 10 sites that receive goods packed with wood dunnage were surveyed for exotic wood boring bark beetles. Traps were placed around these sites, targeting eight exotic wood boring pests. In addition, a visual survey for spotted lanternfly was completed. This survey ran from late March until October. All trap samples were negative for the species being targeted.



Red Imported Fire Ant. The red imported fire ant, a stinging insect native to South America, can be found 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. Unfortunately, due to COVID-19 health and safety protocols, the program was unable to complete the fire ant survey. Inspectors conducting their routine nursery inspections continued to monitor for any imported fire ant populations in nursery stock, but no evidence of this pest was found. Additionally, staff responded to four citizen reports of possible imported fire ants and all were found to be negative.

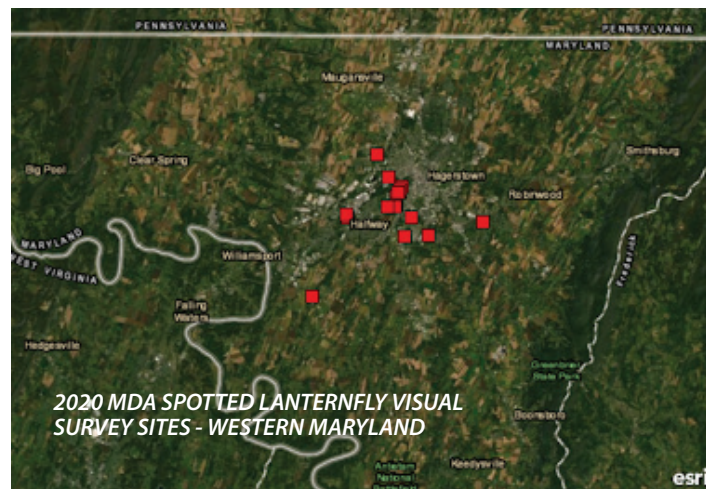
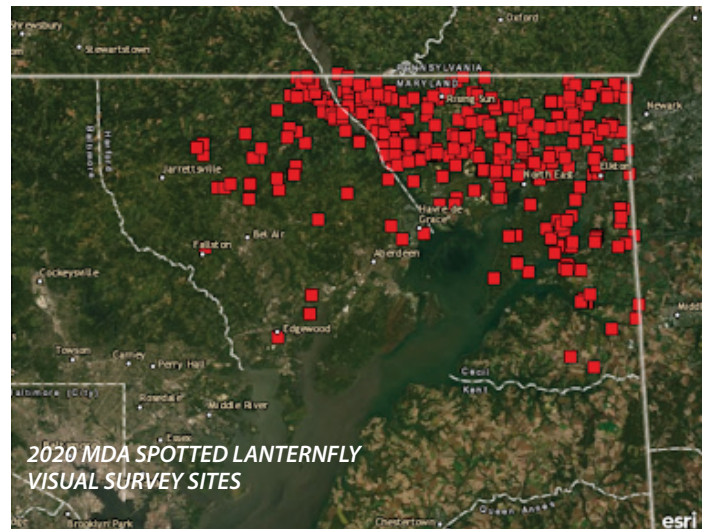
PLANT PROTECTION ACT SURVEYS

Spotted Lanternfly Survey. Spotted lanternfly, an invasive plant hopper native to Asia, is a destructive pest with a wide variety of hosts, including many economically important crops in Maryland such as grapes, hops, and tree fruits. The spotted lanternfly survey was conducted from April through December at 42 sites covering 11 counties in Maryland. These sites were chosen because they were either located in close proximity to known populations of spotted lanternfly in neighboring states or in areas that see large amounts of visitor traffic. The survey was conducted via visual inspection, in addition to the use of sticky tree bands to capture the pests. Of the 42 sites monitored, spotted lanternfly was found at 23 sites. All but one of these infested sites had apparent populations present.



Additionally, inspection surveys were conducted at areas where Maryland citizens reported potential spotted lanternfly sightings to MDA. From June through December 2020, MDA responded to over 2,000 reports of spotted lanternfly, including approximately 400 phone calls and 1,600 emails. Of these reports, evidence of spotted lanternfly specimens were corroborated at 244 new areas, mostly in the vicinity

of previous reports in Cecil and Harford counties. A small population was discovered in Washington County.



Delineation surveys were performed in 2020 as well. Focusing on tree-of-heaven (*Ailanthus altissima*), the primary host of spotted lanternfly, square kilometer grids were established throughout the state. Each grid was extensively searched for the presence of the host tree. Any tree-of-heaven found was surveyed visually for evidence of spotted lanternfly. In 2020, staff delineated 940 grids and found the presence of spotted lanternfly in 109. Almost all the spotted lanternfly were found in areas where populations were previously known to exist.

DIAGNOSTIC LABORATORIES

MDA’s Plant Protection and Weed Management Program laboratories provide testing, analyses, and identifications to support MDA programs, as well as providing answers to inquiries from outside the department.

Entomology Laboratory. In 2020, the Entomology Lab processed a number of interesting specimens as bycatch from survey traps. In corn commodity traps the department identified: an adult *Batyle suturalis*, a rice stink bug (*Oebalus pugnax*), a *Rhopalosoma nearcticum*, and a red jumping spider (*Phidippus whitmanii*). Spotted lanternfly tree bands captured: several *Cyrtopodus belfragei*, wheel bugs (*Arilus cristatus*), and flat bark beetles (*Mezira subsetosa*). Exotic wood-boring beetle traps collected several syrphid flies (*Temnostoma*). Also of interest was a small-headed fly (*Acrocera*). The sirex woodwasp (*Sirex noctilio*) traps yielded one *Ibalia anceps*, a number of *S. nigricornis*, and *S. edwardsii*. These findings were good indicators that the trap lures are attractive to the target genus.

Plant Pathology Laboratory. The plant pathology laboratory provides testing, analysis, and recommendation services for problems caused by abiotic and biotic pathogens for MDA's programs and Maryland's horticulture industry. MDA's plant pathologist reviews and suggests changes on import permits for plant pathogens and genetically modified plant materials as part of the state's regulatory responsibility.

The diagnostic laboratories' primary responsibility is to test and detect pathogens, disease, and damage problems encountered during inspection of plant materials in nurseries, landscapes, and retail stores throughout Maryland.

MDA's Plant Protection and Weed Management contracted with UMD's Plant Pathology Lab to diagnose and identify samples from the state's nursery industry. The following three regulated pathogens were suspected in inspections of plant materials from nurseries and retail establishments in Maryland in 2020.

- **Boxwood Blight (*Calonectria pseudonaviculatum*).** Several samples were taken and tested for this pathogen. One positive incident occurred with appropriate regulatory action taken.
- **Sudden Oak Death (*Phytophthora ramorum*).** No positives for this federally-regulated pathogen were detected in the surveys conducted on Maryland nurseries during 2020. Initial testing for *Phytophthora* from UMD's Plant Pathology Lab and Cornell tested positive *Phytophthora* samples for evidence of *ramorum*. Ultimately, no evidence of *Phytophthora ramorum* was found.
- **Southern Bacterial Wilt [*Ralstonia solanacearum* (*RSr3b2*)].** This particular version of Southern bacterial wilt is not found in the U.S. and is under federal quarantine given its threat to the farming industry. A

positive case appeared in Michigan from an overseas supplier and suspect geraniums from a Maryland greenhouse were tested and destroyed. This version of Southern bacterial wilt has not been detected in Maryland.

The state plant pathologist position is expected to be filled by spring 2021.

Greenhouse Laboratory. Greenhouse production was affected by the global pandemic in 2020. Overall in Maryland, fewer plants were propagated and maintained given health and safety protocols, travel restrictions, and hiring freezes enacted by the State of Maryland. Mile-a-minute (MAM) weed plants were produced for the Integrated Pest Management (IPM) and biological control program for insect colonies that require food and plant material. In 2020, MAM stem cuttings were taken and approximately 980 MAM plants were transplanted and grown in the greenhouse to be used as food for colonies of the stem-boring weevil, the biocontrol agent for MAM plants.

The MDA greenhouse continued refining best management protocols for growing knotweed (*Fallopia japonica*) that will sustain the knotweed psyllid (*Aphalara itadori*), which is a biocontrol agent that may help control the invasive knotweed. A total of 150 knotweed plants have been propagated and continue to be maintained in the greenhouse.

Additional support for the Maryland 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.

The greenhouse continues to provide large-scale sterilization of infested or weedy plant material and soil, in order to maintain colonies of MAM and knotweed and to dispose of quarantined nursery material. Geraniums with a possible *Ralstonia* infection — which was the first time this federally-regulated pathogen has been detected in the U.S. since 2004 — were destroyed in May 2020 in the greenhouse autoclave.

A variety of other programs that usually take place with support from the greenhouse on a yearly basis did not occur this year. The department hopes that plant production at the greenhouse will again support programs like the Maryland State Fair and the Certified Professional Horticulturist Exam in years to come.

PLANT CERTIFICATION

Maryland Ginseng Management Program. The Maryland Ginseng Management Program protects American ginseng (*Panax quinquefolius*) by monitoring the harvest and licensing diggers and dealers of wild, wild-simulated, woods-grown, and cultivated ginseng. MDA 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 harvesting. 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.

MDA also works with growers of wild-simulated and wood-grown ginseng to allow them to meet regulatory requirements and to market and export their highly-valued crops. These roots, both dried and green (fresh), are highly prized, especially in China and Korea, for properties that putatively promote good health.



During the 2019-2020 season, the Maryland Ginseng Management Program licensed 14 ginseng dealers and 134 ginseng collectors in the state. For the 2020-2021 season, 11 dealers and 132 collectors were licensed. 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. Harvest season ends December 15 and the sales season ends March 31 of the following year. Harvest numbers reported are for the program season beginning September 1, 2019 and ending March 31, 2020.

Over the 2019-2020 harvest and sales season, the program inspected, collected size and age data from, and weighed and certified: 62.71 pounds of dry wild ginseng root, 1.58 pounds of green (fresh) wild ginseng root, 9 pounds of wild-simulated dry ginseng root, 213 pounds of wild-simulated green (fresh) ginseng root, and 25 pounds of green (fresh) woods-grown ginseng root. No cultivated ginseng root was certified for the 2019-2020 harvest season.

For the purpose of this report, both artificially propagated (cultivated and woods-grown) ginseng and wild-simulated ginseng harvests are 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 2018-2019, the 2019-2020 harvest and certification numbers were up approximately 5% for dry wild ginseng and 45% lower for artificially propagated dry ginseng. The amount of wild green (fresh) ginseng root certified in the 2019-2020 season represents about an 82% decrease as compared to 2018-2019. For wild-simulated green (fresh) roots, there was an increase of about 88% compared to 2018-2019.

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 MDA, 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 time of licensing were modified in 2020 to gather currently pertinent information on participants' concerns and opinions. Many respondents continue to relate that the incidence of out-of-season poaching of wild ginseng

in Maryland remains high. 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.

The 2019-2020 season was a challenging time due to COVID-19 related restrictions. Several scheduled in-person events were canceled or limited to online participation. This included the Smithsonian FolkLife Festival in Washington D.C., which had planned to focus on botanical herbs like ginseng. Maryland's Ginseng Management Program staff continued their participation in working groups that included members of each of the 19 states and one tribe that actively managed the harvest and sale of ginseng. These working groups shared ideas and experiences with the goal of achieving a higher level of consistency and understanding regarding both the preservation and certification practices regarding American ginseng. Groups were formed during the American Ginseng Coordination Meeting between the USFWS and state and tribal ginseng management programs in July of 2017 and focused on issues including the biology, regulatory practices, and public outreach methods with regards to ginseng management. During the past year, each group conclusively submitted their findings for consideration by USFWS representatives. The results of these efforts could help to shape the way that MDA and other state and tribal agencies handle the preservation of American ginseng in the future.

WEED INTEGRATED PEST MANAGEMENT (IPM)

The department's Plant Protection and Weed Management Program entomologists and staff continued to work with the Maryland Department of Transportation (MDOT) State Highway Administration (SHA) to conduct an IPM program aimed at providing biological control for certain targeted weed species on SHA right-of-ways.

In 2020, weed IPM research and suppression activities were conducted on SHA right-of-ways, using funding from SHA and the USDA APHIS PPQ program. The department's weed management and projects that support biological control research have been conducted over the past 20 years and have, at various times, involved cooperation with: SHA, the Howard County Department of Recreation and Parks, the Maryland National Capital Park and Planning Commission, the

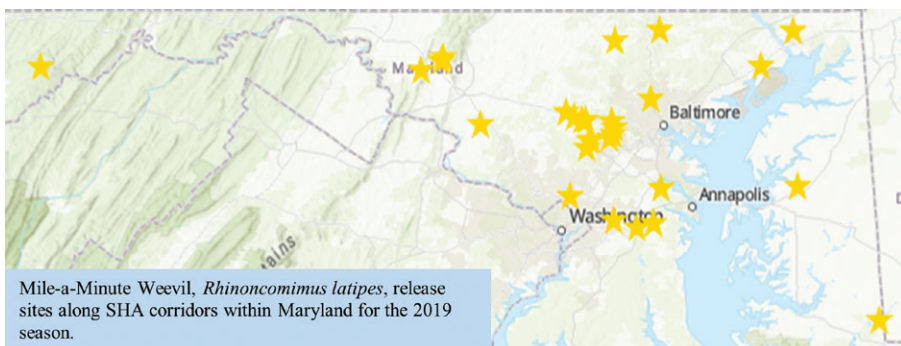
DNR, USDA Agricultural Research Service (ARS), USDA APHIS, the U.S. Forest Service, the USFWS, the U.S. Geological Survey, and, in certain cases, private Maryland businesses, nonprofits, and individual landowners.

MDA's Plant Protection and Weed Management is focused on biological control of MAM and initiating a knotweed program using host specific insect biological control agents. During 2020, MDA continued working with the Landscape Operations Division of SHA to administer a program to continue biological control driven suppression of MAM and to start a program aimed at suppression of knotweeds. These programs include lab, greenhouse rearing, and field release and monitoring of the weevil (*Rhinoncomimus latipes*). Sites for knotweed suppression were identified and surveyed. Funding for rearing, release and monitoring of the weevil, and initiating the knotweed program is provided by SHA. The knotweed program is also funded by a federal grant.

Despite COVID-19 restrictions to lab access and no contractual workers, the biocontrol program managed to raise and release weevils in 2020. During the growing season, a total of 4,116 weevils were released on sites statewide. Throughout the 2020 season, surveys occurred on all 28 site visits in eight different counties within Maryland.

Release numbers were supplemented by 2,500 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, MAM. These host plants are grown in the MDA greenhouse. In 2020, 980 MAM plants were grown to maintain weevil colony growth and ensure weevil releases throughout the state.

The MAM weevil, has now been released by MDA staff and is established in at least portions of the following Maryland counties: Allegany, Anne Arundel, Baltimore, Carroll, Cecil, Charles, Frederick, Garrett, Harford, Howard, Kent, Montgomery, Prince George's, Queen Anne's, Somerset, Washington, and Wicomico.



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, such as Johnsongrass, shattercane, and thistles, can 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 maintenance expenses are also incurred for natural areas, roadsides, and non-crop properties.

Maryland's Noxious Weed Law was amended in 2020 with changes and the adoption of regulations. The regulations added Palmer amaranth and common waterhemp to the list of noxious weed species in Maryland and added new administrative penalties, which can require department/landowner hearings.

The Noxious Weed Law has a provision that MDA 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, the local farming community, 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 2020, noxious weed advisory notices were sent to 176 managers of property infested with noxious weeds. Generally, these notices were effective in obtaining compliance. When notifications are unsuccessful, MDA may take legal action.

MDA's Weed Control Program also responds to citizens' requests for technical assistance in controlling invasive, persistent weeds such as phragmites, tree-of-heaven, kudzu, and MAM plants.

Weed Control staff 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 2020, three sites were treated for giant hogweed in Garrett County and four sites were treated in Baltimore 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 landowners' expense.

Weed Control staff partnered with DNR for the 19th year to help run a program that manages phragmites. Upon request from landowners or managers, program staff supplies technical and spraying assistance for control of phragmites. DNR provided all of the herbicides applied in the nine Eastern Shore counties for phragmite spraying.

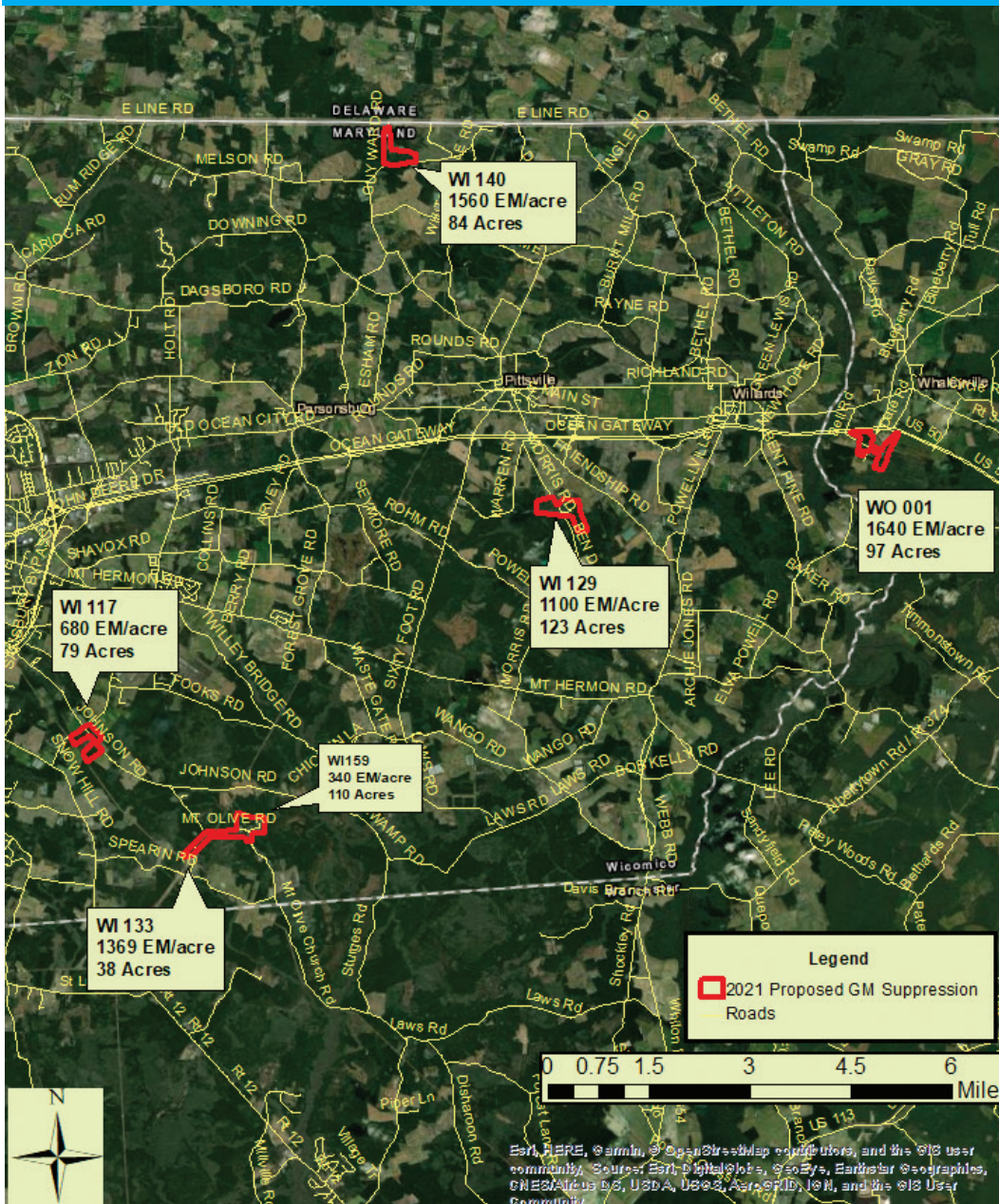
PLANT PROTECTION AND WEED MANAGEMENT SUMMARY OF ACTIVITIES

Activity	CY 2018	CY 2019	CY 2020
Beekeepers Registered	2,180	2,119	2,160
Honey Bee Colonies Registered	15,630	14,415	16,494
Honey Bee Colonies Inspected (Human Inspectors)	3,011	1,438	1,805
Honey Bee Colonies Inspected (Canine Inspectors)	1,846	1,831	2,089
Ginseng Dealers Registered	11	14	11
Ginseng Collectors Licensed	115	134	132
Nurseries Certified	311	300	297
Plant Dealers and Brokers Licensed	1,469	1,435	1,456
Phytosanitary Certificates Issued	473	592	180
Plant Pest Surveys-Number of Target Pests	38	54	26
Plant Pest Surveys-Number of Samples Processed	2,596	3,101	1,727
Target Pests Detected	12	11	9
Number of Noxious Weed Advisory Notices Issued	337	243	176

Note: Due to the seasonal nature of this program and calendar year federal reporting requirements, data is reported on a calendar year basis.

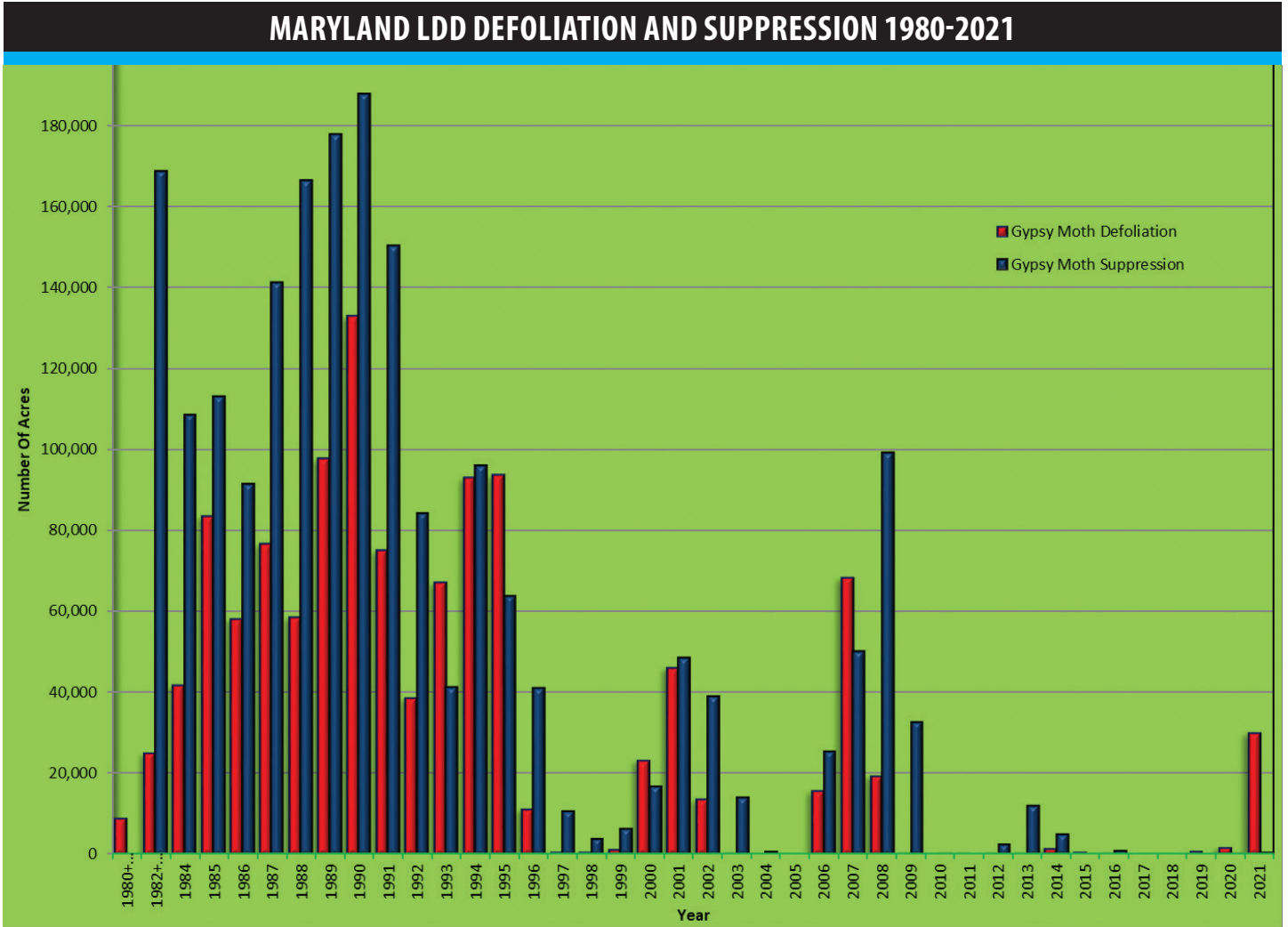
FOREST PEST MANAGEMENT

MDA FPM 2021 PROPOSED LDD SUPPRESSION BLOCKS (WICOMICO AND WORCESTER COUNTIES)

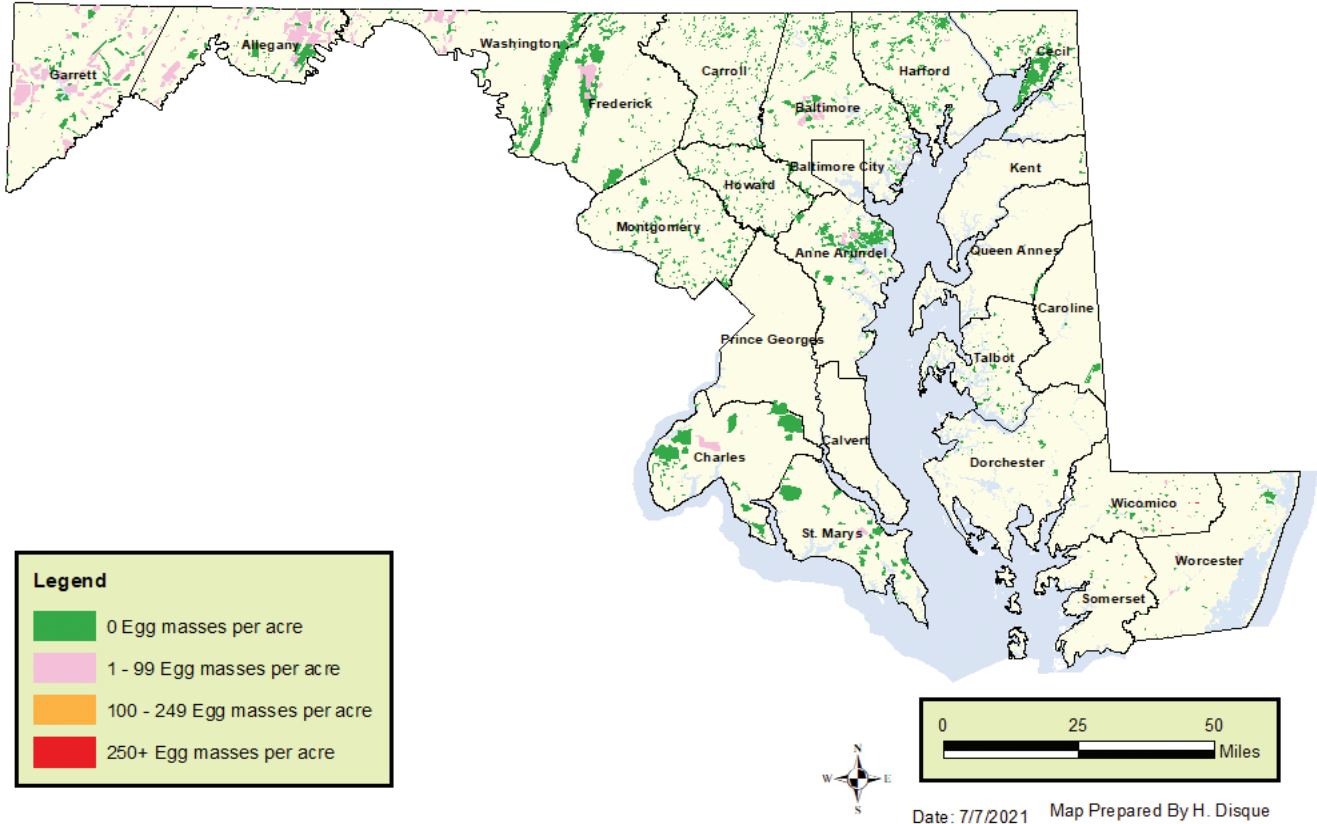


FOREST PEST MONITORING AND SURVEYING

***Lymantria dispar dispar* (LDD).** LDD, the insect formally known as European 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 LDD egg masses to determine potential areas of defoliation. From August 2020 through March 2021, MDA's Forest Pest Management personnel conducted LDD egg mass surveys on 484,389 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 sufficient to cause moderate to heavy defoliation on 531 acres in 2021. In May 2021, 531 acres located on the lower Eastern Shore were sprayed with *Bacillus thuringiensis*. In 2021, LDD defoliation totaled 30,000 acres on the lower Eastern shore.



MDA FPM 2020-2021 LDD EGG MASS SURVEY RESULTS



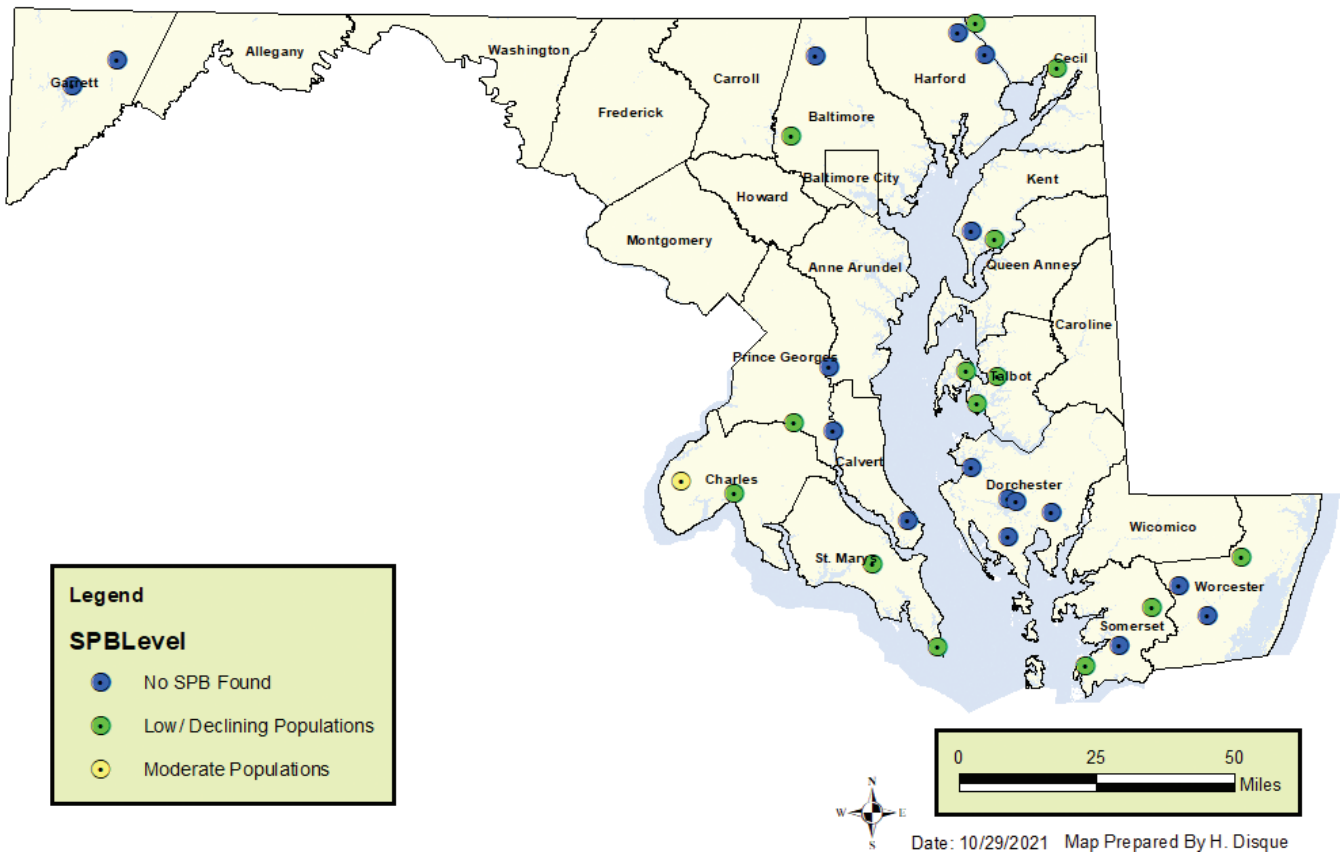
Southern Pine Beetle (SPB). SPB is one of the most destructive insect pests of pines. Maryland is at the northern edge of its range and is commonly found on the lower Eastern Shore and in southern Maryland. Since 1989, Maryland has participated in a multi-state SPB survey throughout the southern United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

Traps were set up in 13 counties across Maryland. All traps collected showed low/declining populations of SPB or no presence of SPB, with the exception of one trap in Charles County, which collected moderate populations of the beetle.

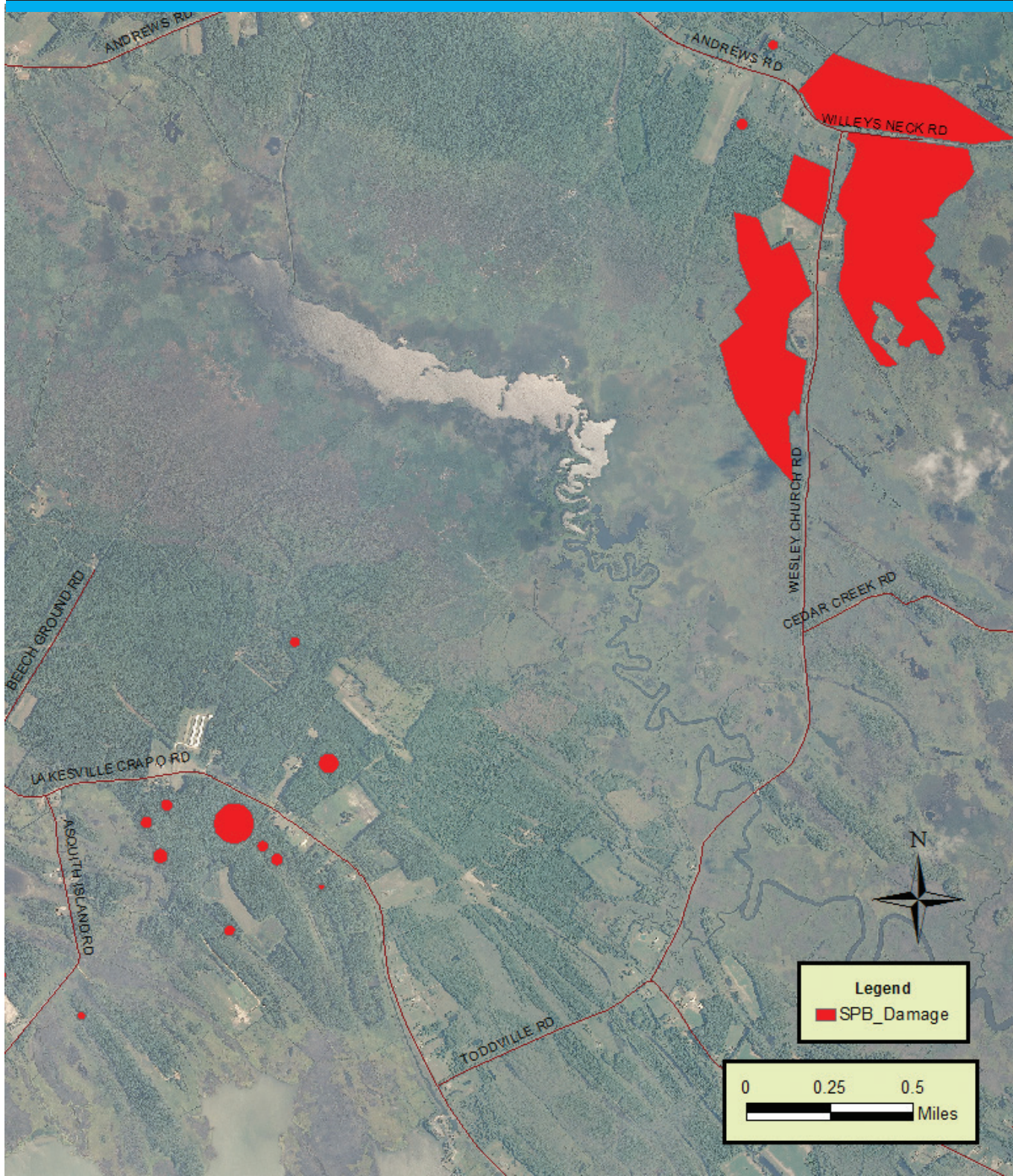
At the site in Charles County, ground survey and an aerial drone survey were completed. No mortality or declining trees were found. The traps were set up shortly after the time of redbud bloom.

The Dorchester County area that had experienced an SPB outbreak from 2015 to 2017, has shown no additional tree mortality due to SPB. Many trees in this area and southern Dorchester County are exhibiting chlorotic needles due to flooding and salt-water intrusion.

MDA FPM 2021 SOUTHERN PINE BEETLE TRAP RESULTS

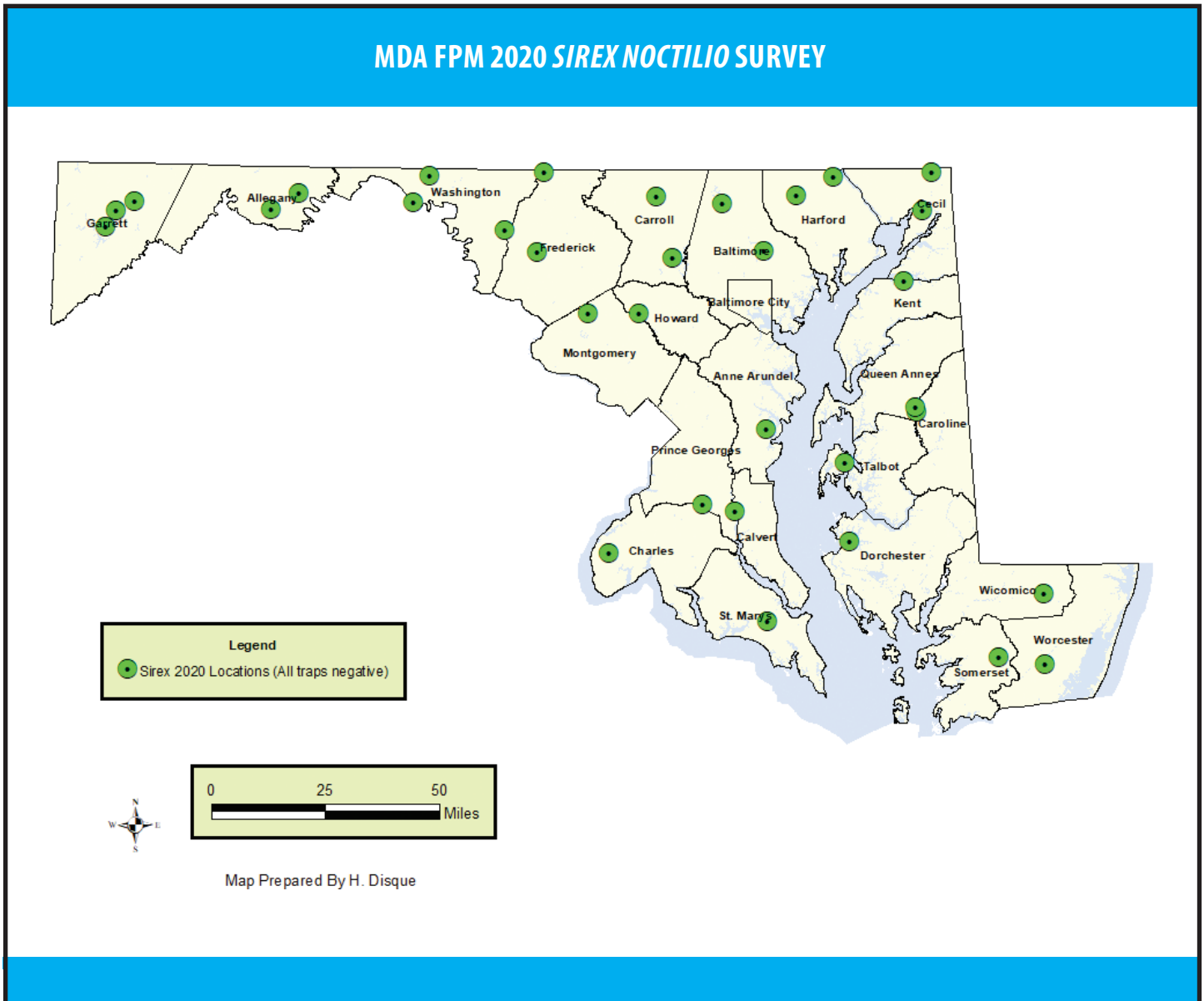


MDA FPM SOUTHERN PINE BEETLE AFFECTED AREAS 2015-2017 DORCHESTER COUNTY



Woodwasp (*Sirex noctilio*). *Sirex noctilio* 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 pines. *Sirex noctilio*

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 33 traps in pine woods. All traps were negative during CY20.



Emerald Ash Borer (EAB). MDA's Forest Pest Management put up 18 green funnel traps in non-positive counties around the state and in the parasitoid release areas to monitor for EAB. EAB was found in Somerset, Harford, Cecil, Kent, and Baltimore counties. Six beetles were caught in a trap alongside a riparian forest edge in Somerset County, marking the county's first confirmed EAB sighting.

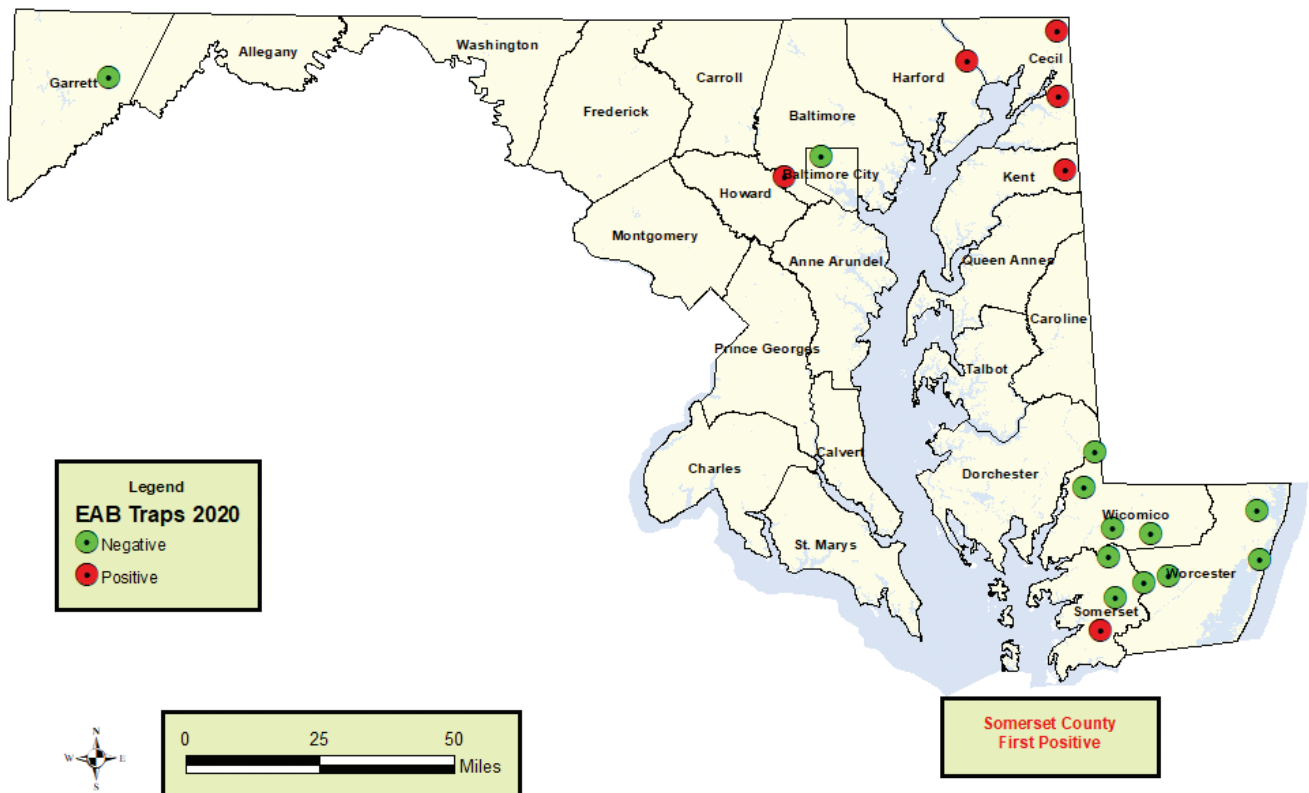
Large-scale, rapid tree die off has begun at the Baltimore County and Baltimore City parasitoid release locations. Rural forests along the upper Eastern shore are beginning to see tree mortality as well.

During the 2020 field season Forest Pest Management released 12,661 parasitoids of EAB. The parasitoids were released at five state park locations, one arboretum, and one Nature Conservancy property. These parasitoid release sites

were located in Garrett, Harford, Baltimore, Cecil, Caroline, and Dorchester counties as well as Baltimore City. MDA's Forest Pest Management released 26,000 *Oobius agrili* as pupae in 26 vials. At one site 4,928 *Tetrastichus planipennis* were released in 38 bolts. Two species of *Spathius* were released, 564 *Spathius agrili* as adults and 4,569 *Spathius galinae* pupae in sticks.

In addition, Forest Pest Management staff supervised treatments of ash trees around the state. Fewer treatments were performed due to COVID-19 restrictions. This work was done at parks in cooperation with DNR, the Blackwater National Wildlife Refuge, and the Maryland Conservation Corps (MCC). In total 92 ash trees, 1,409" diameter at breast height (DBH) were treated using 7,805 ml of Tree-age, emamectin benzoate. Many of the trees treated were in riparian areas targeting rare tree species in order to provide seed for future regeneration.

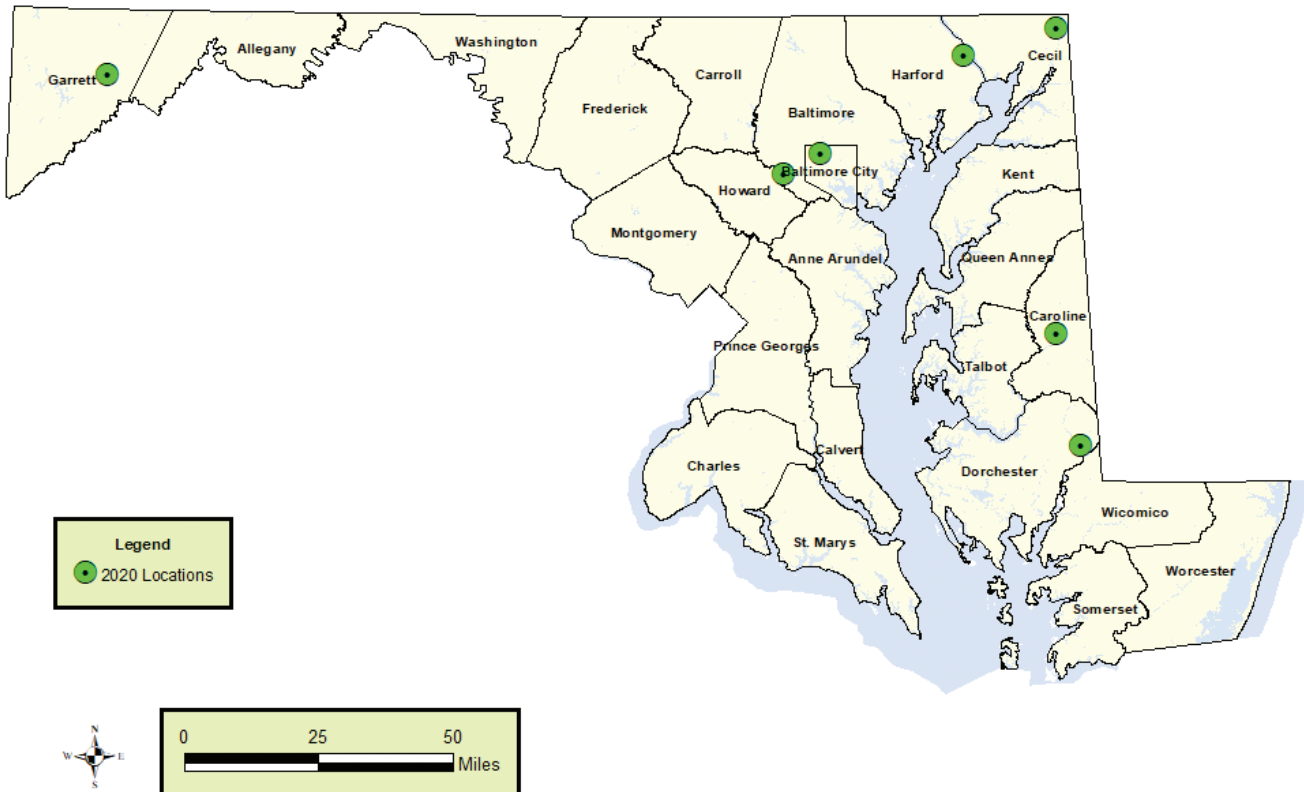
MDA FPM 2020 EMERALD ASH BORER TRAP RESULTS



EASTERN SHORE FPM 2020 EMERALD ASH BORER PARASITOID RELEASE SUMMARY

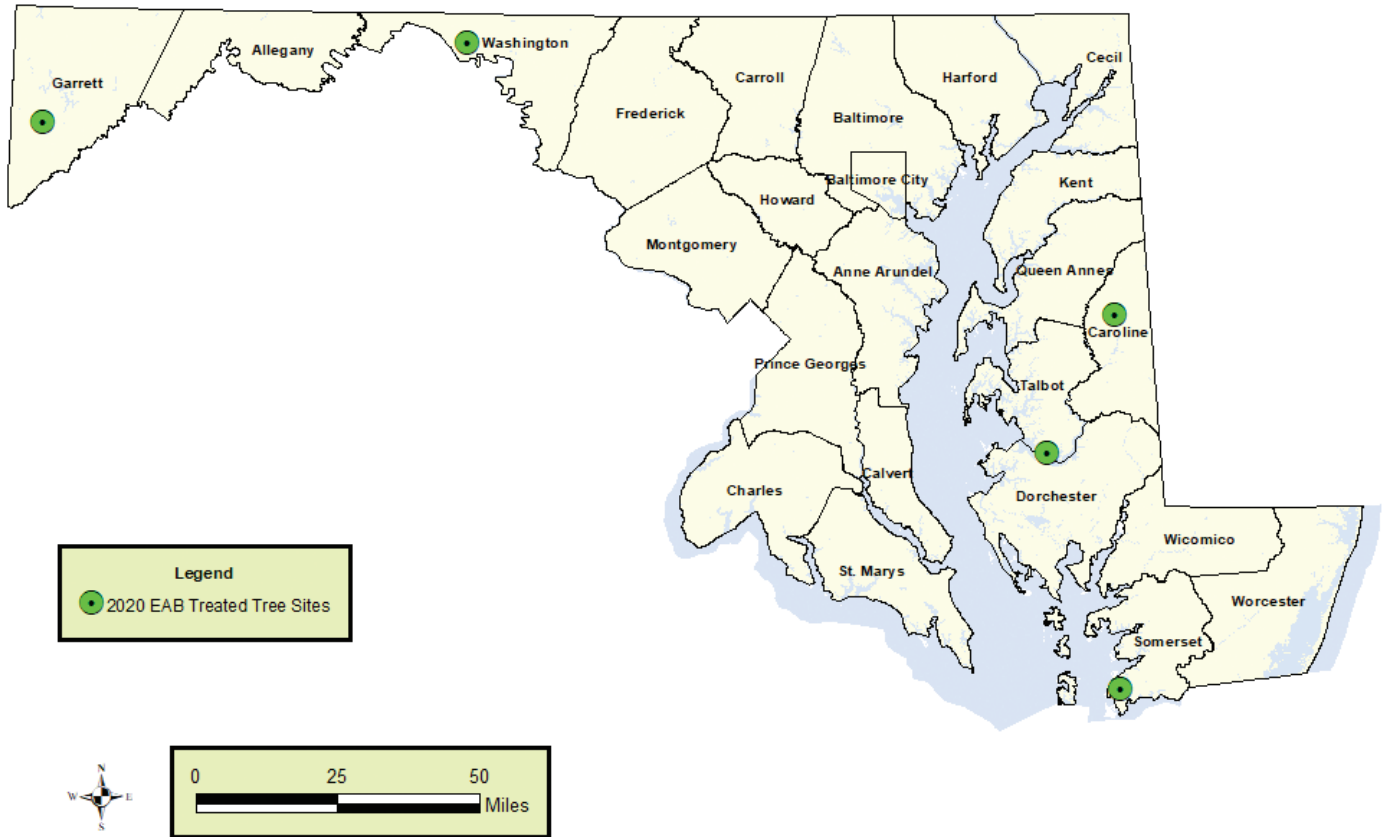
Site Name	Latitude	Longitude	Oobius agrili (vials)		Spathius agrili		Spathius galinae		Tetrastichus planipennis	
			# vials	Total	# females	# males	# females	# males	# bolts	Total
Cylburn Arboretum	39.3513	-76.6537			211	68	747	250		
Big Run State Park	39.5449	-79.1385							38	4928
Martinak State Park	38.86002	-75.8415					905	298		
Susquehanna State Park	39.61383	-76.151					794	481		
Patapsco Valley State Park	39.29593	-76.7836			212	73				
Fair Hill State Park	39.70282	-75.8288	12	1200			769	405		
Walnut Landing	38.53476	-75.7655	14	1400						
Totals			26	2600	423	141	3215	1354	38	4928

MDA FPM 2020 EMERALD ASH BORER PARASITOID RELEASE LOCATIONS



Map Prepared By H. Disque

MDA FPM, DNR, AND MCC - 2020 EMERALD ASH BORER TREATMENT LOCATIONS



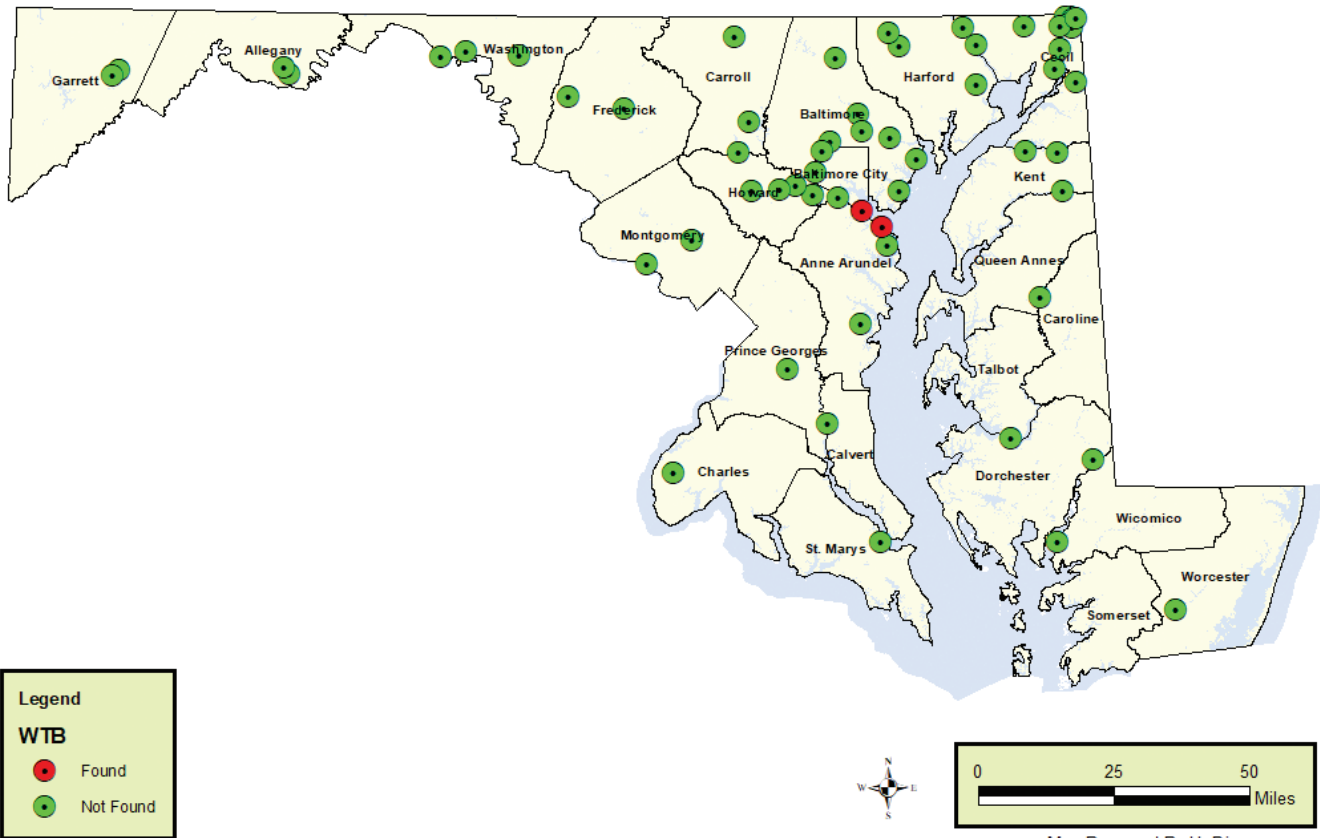
Map Prepared By H. Disque

Thousand Canker Disease (TCD) in Black Walnut Trees and Walnut Twig Beetles (WTB). TCD was first recognized in 2008 as a complex consisting of the WTB (*Pityophthorus juglandis*) and the fungus *Geosmithia Morbida*. TCD is blamed for widespread mortality of eastern black walnut trees planted in the western U.S. 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 including Tennessee, Indiana, Ohio, Pennsylvania, Virginia, North Carolina, and Maryland. In 2011, Maryland along with several other Mid-Atlantic states started surveying for this disease. The WTB was first detected in Maryland in 2013 and by October 2014, TCD was confirmed. A quarantine order for northeastern Cecil County was issued by MDA in January 2015 to limit the spread of TCD in black walnut trees. Upon new positive detections in 2018, the quarantine order was updated to include all of Baltimore City

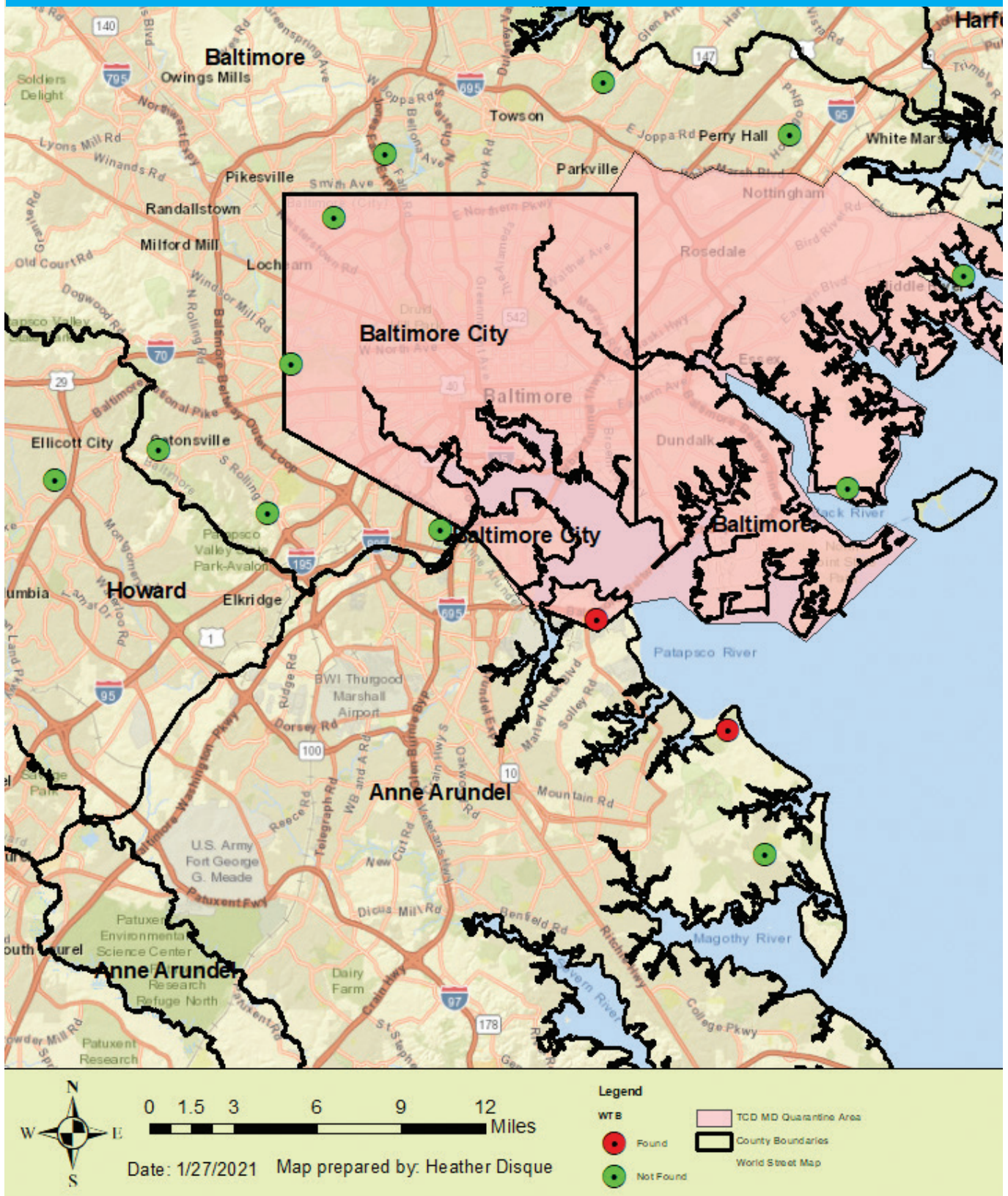
and part of Baltimore County. This new quarantine was signed on May 1, 2019, by the Maryland Secretary of Agriculture.

In 2020, Forest Pest Management staff set 60 Lindgren funnel traps baited with the WTB lure across 20 counties and in Baltimore City. Of these traps, 26 were set near previously positive sites in Cecil and Baltimore counties and Baltimore City to delimit the infested areas. Traps were checked every two weeks, field samples were collected, samples were sorted and labeled in office, and then samples were sent to the Pennsylvania Department of Agriculture for identification. The previously positive site, trap CE01, was not positive in 2020. Trees at the original positive site have shown no evidence of decline. One trap in Anne Arundel County and one trap in Baltimore City were found to be positive. The Anne Arundel County sighting was the first on record for the county. The trees are being monitored for decline and samples will be taken when TCD symptoms develop.

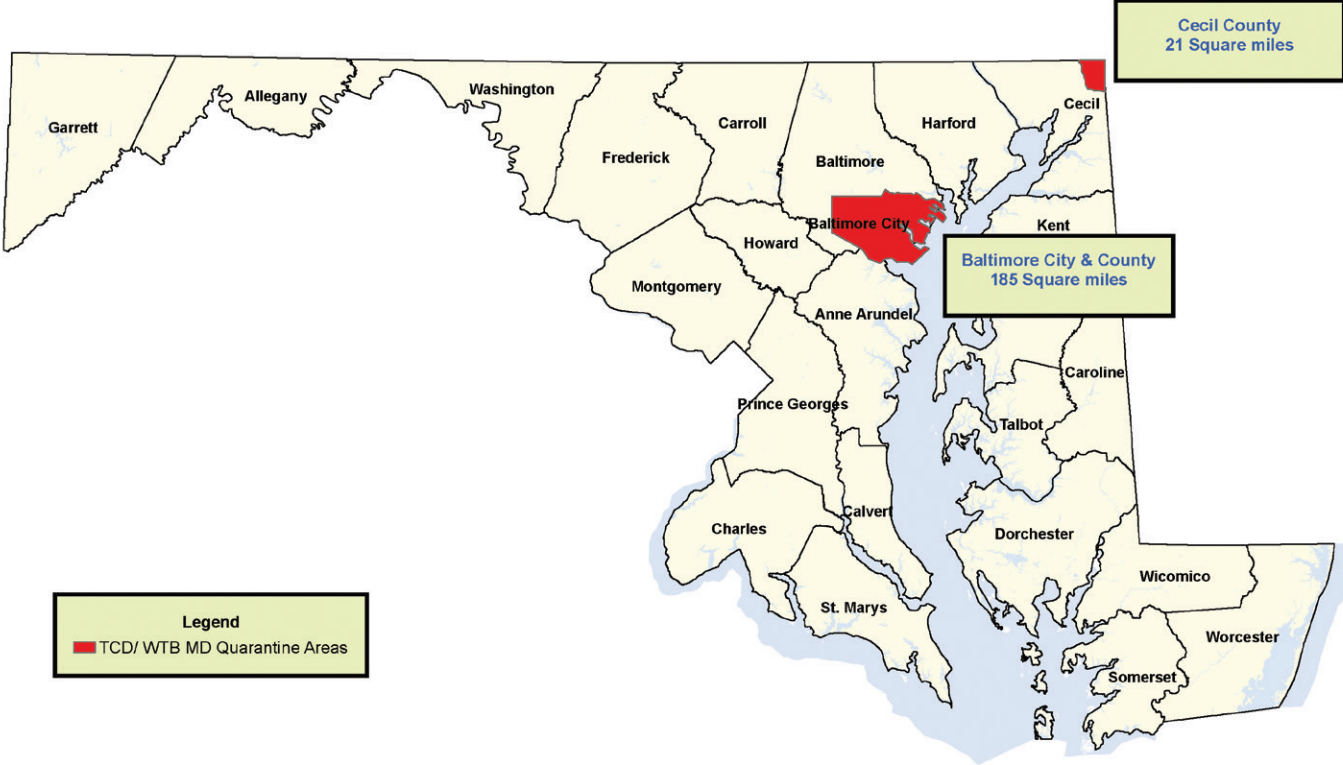
MDA FPM 2020 WTB TRAP RESULTS



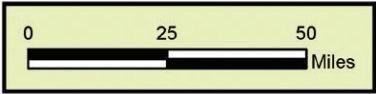
MDA 2020 WTB TRAP RESULTS AND TCD QUARANTINE - ANNE ARUNDEL COUNTY, BALTIMORE CITY AND COUNTY



MDA TCD AND WTB QUARANTINE AREAS



Legend
■ TCD/ WTB MD Quarantine Areas



Map Prepared By H. Disque

Hemlock Woolly Adelgid (HWA) Suppression. The HWA remains the major threat to the health of eastern hemlocks. Infested hemlocks are present 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 composed of MDA Forest Pest Management and 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, either chemical and/or biocontrol. Only publicly-owned or public-use sites are part of this suppression project. Currently, the chemical option involves treating the hemlock trees with

an insecticide, imidacloprid, by one of two methods, either 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 6,692 hemlock trees and 75,415" DBH were treated in Maryland between July 1, 2020, and June 30, 2021. Of this total, 995 trees or 9,497" DBH were trunk injected and 5,696 trees or 65,897" DBH were soil injected. CoreTect was used to treat one tree totaling 21" DBH. Treatment efforts in 2020 were severely affected by the COVID-19 pandemic.

MDA FPM YEARLY IMIDACLOPRID TREATMENTS FOR HEMLOCK WOOLLY ADELGID CONTROL IN MARYLAND 2004-2020

Year	Trunk Injection #Trees	Trunk Injection Inches DBH*	Soil Injection # Trees	Soil Injection Inches DBH*	CoreTect # Trees	CoreTect Inches DBH	Total #Trees	Total Inches DBH*
2004	166	2,687	0	0	0	0	166	2,687
2005	106	1,433	1,675	17,623	0	0	1,781	19,056
2006	38	476	1,015	9,465	0	0	1,053	9,941
2007	22	325	324	4,279	0	0	346	4,604
2008	129	1,982	18	257	0	0	147	2,239
2009	124	1,281	675	6,029	0	0	799	7,310
2010	724	8,534	3,673	33,701	98	862	4,495	43,096
2011	1,905	19,468	7,285	81,684	80	610	9,270	101,761
2012	1,957	20,206	10,086	105,395	4	45	12,047	125,645
2013	1,980	18,993	11,755	117,604	7	47	13,742	136,644
2014	1,844	19,047	6,915	75,751	644	7,853	9,403	102,651
2015	1,474	14,378	8,072	94,099	4	32	9,550	108,509
2016	1,822	19,791	8008	85,813	64	577	9,894	106,181
2017	1,435	15,610	8,511	93,997	234	252	10,180	109,859
2018	1,433	14,647	8,667	93,623	220	557	10,320	108,827
2019	1,431	14,994	8,386	82,628	27	180	9,844	97,802
2020**	127	1,893	555	13,102	5	37	687	15,032
Total	16,590	173,852	85,620	915,050	1,387	11,052	103,037	1,086,812

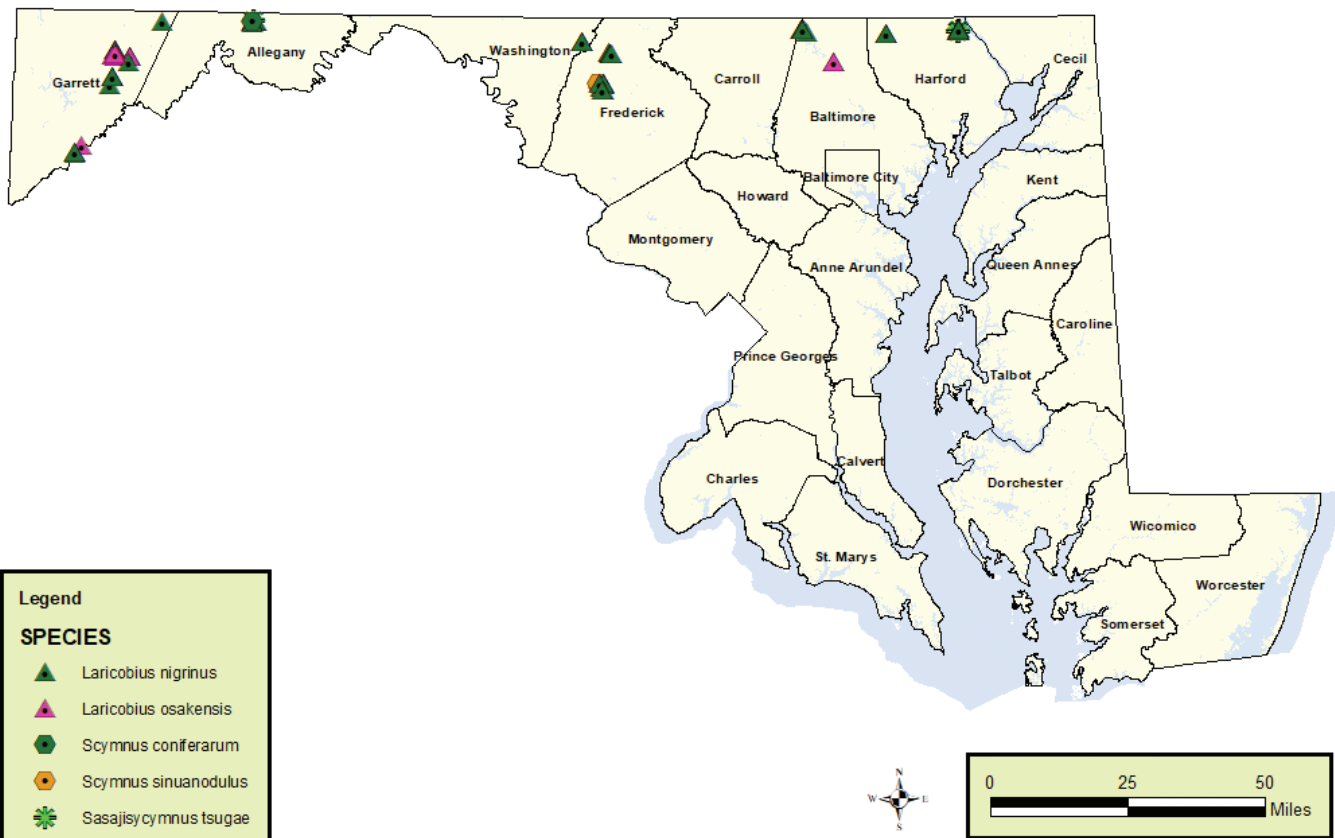
** includes totals from spring only

HWA Predator Releases. Over 54,297 HWA predators have been released in Maryland since 1999. In 2020, 1,020 *Laricobius nigrinus* were released at sites in Harford and Frederick counties, and 512 *Laricobius osakensis* were released in Garrett County.

HWA Efficacy Surveys. HWA treatment efficacy surveys have been conducted annually since 2006. Data analyzed

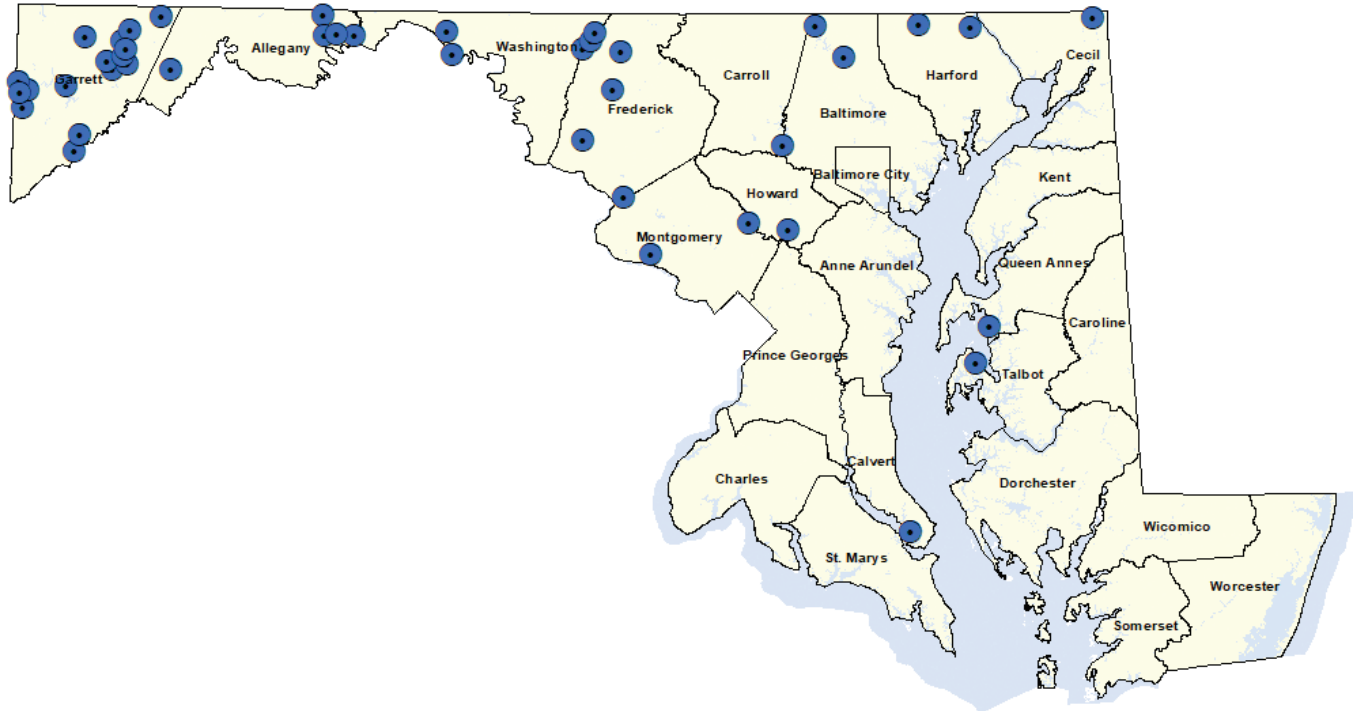
through 2017 shows treated trees averaged a 79% reduction in HWA populations when measured one-year post-treatment and non-treated trees averaged a 24% increase in HWA populations over the same period. From 2019-2020, efficacy surveys were done at treatment sites in Baltimore, Frederick, and Garrett counties.

MDA FPM HEMLOCK WOOLLY ADELGID PREDATOR RELEASES IN MARYLAND HEMLOCK STANDS 1999-2020



Date: 2/1/2021 Map Prepared By H. Disque

MDA FPM MARYLAND HEMLOCK STANDS TREATED FOR CONTROL OF HEMLOCK WOOLLY ADELGID 2004-2020



Legend

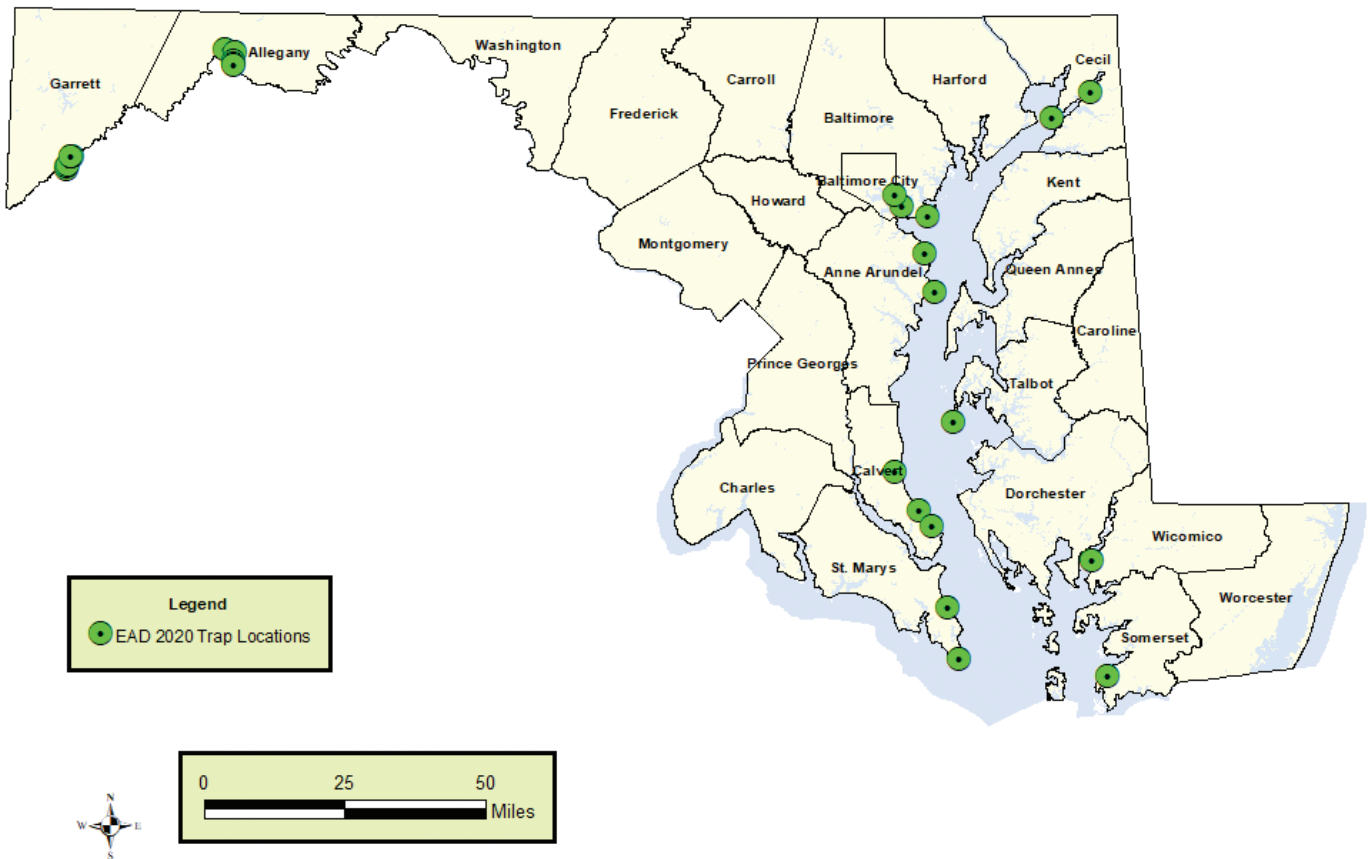
- Treated Hemlock Stands

Date: 1/28/2021 Map Prepared By H. Disque

Exotic Asian Defoliator Survey. A comprehensive exotic Asian defoliator survey was proposed and funded through the Farm Bill for 2020. This survey increases the likelihood that these harmful invaders 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. Eight 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.

Traps were deployed at 18 locations statewide to determine the presence or absence of exotic Asian defoliator moths. At each location six traps were set to survey for the eight species of moths. Traps ran from May to September and were checked bi-weekly. Forests composed of oak, willow, sweet gum, poplar, beech, pine, and other host trees and shrubs were surveyed. Several *Lymantria dispar asiatica/japonica* traps were found positive for LDD. The specimens were sent to the USDA’s Otis Laboratory for genetic testing and species determination. All specimens were determined to be the insect formally known as the European gypsy moth, LDD.

MDA FPM 2020 EXOTIC ASIAN DEFOLIATOR SURVEY TRAP LOCATIONS



Map Prepared By H. Disque

Beech Leaf Disease (BLD). BLD was first discovered in declining American beech trees in Ohio in 2012. It has since been found in Pennsylvania, New Jersey, New York, Connecticut, West Virginia, Virginia, and southern Ontario, Canada. This disease, which is linked to the nematode *Litylenchus crenatae mccannii*, causes mortality of understory American beech saplings and seedlings, and severe decline in mature, overstory trees. Forest Pest Management staff set

up and monitored 17 permanent plot locations for BLD and conducted over 160 site surveys. All sites have been negative for BLD.

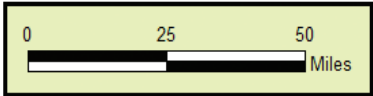
The survey sites had trees in the following size class: 4-12 inches had 80 surveys, 12-25 inches had 48 surveys, greater than 25 inches had 23 surveys, and under 4 inches had 11 surveys.

2020 MDA BEECH LEAF DISEASE PERMANENT PLOT LOCATIONS



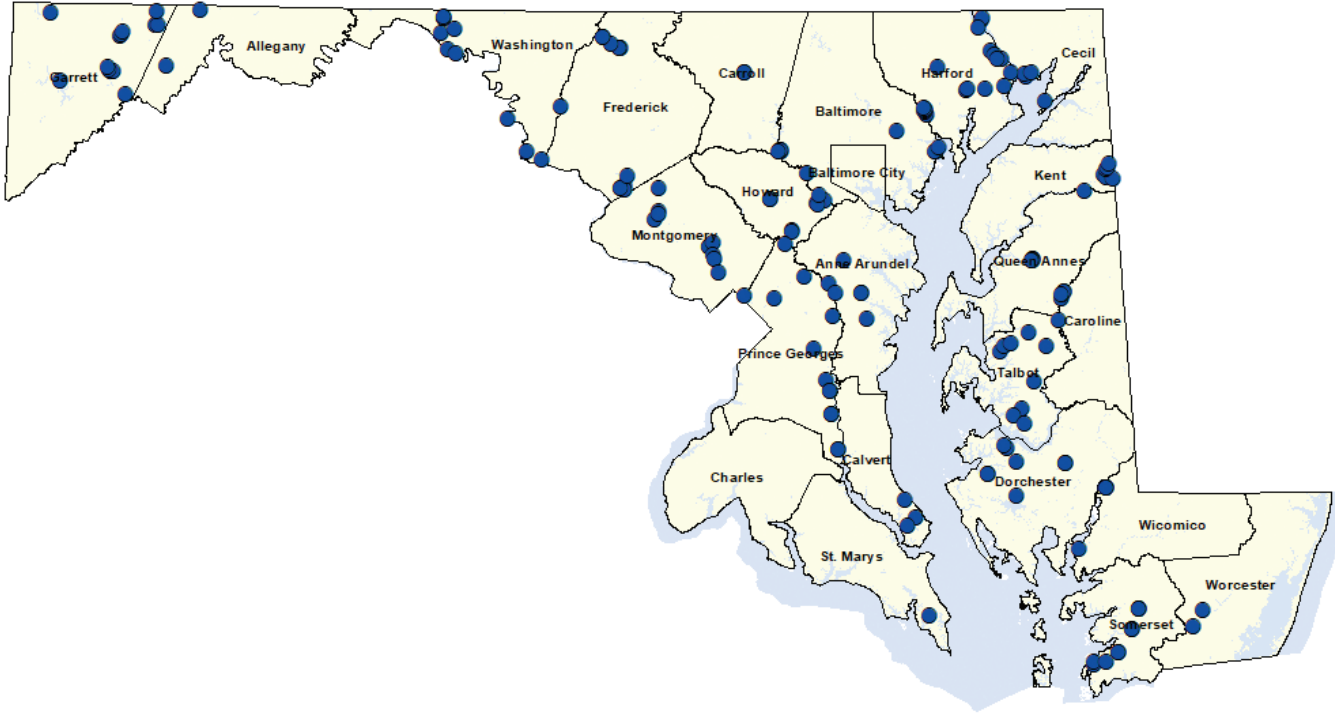
Legend

- BLD Permanent Plot Locations (No BLD Detected)

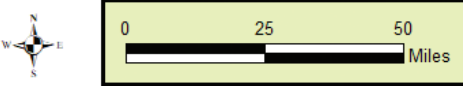


Date: 3/22/2021 Map Prepared By H. Disque

2020 MDA BECH LEAF DISEASE SURVEY LOCATIONS



Legend
● BLD Survey 2020 (All sites negative for BLD)



Date: 2/9/2021 Map Prepared By H. Disque

Beech Bark Disease (BBD). BBD has been found in approximately 160,000 acres in Allegany and Garrett counties. In 2013, four permanent BBD monitoring sites were established. Permanent plots were visited in 2020 for the

detection of BLD. During BLD surveys, BBD was found in the Frostburg watershed for the first time. Areas with confirmed BBD are highlighted on the map below.

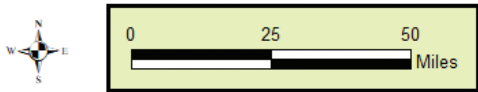
MDA FPM 2020 BEECH BARK DISEASE LOCATIONS



Legend

beech_bark

- Positive for BBD
- Scale insect & Cankers
- Scale insect



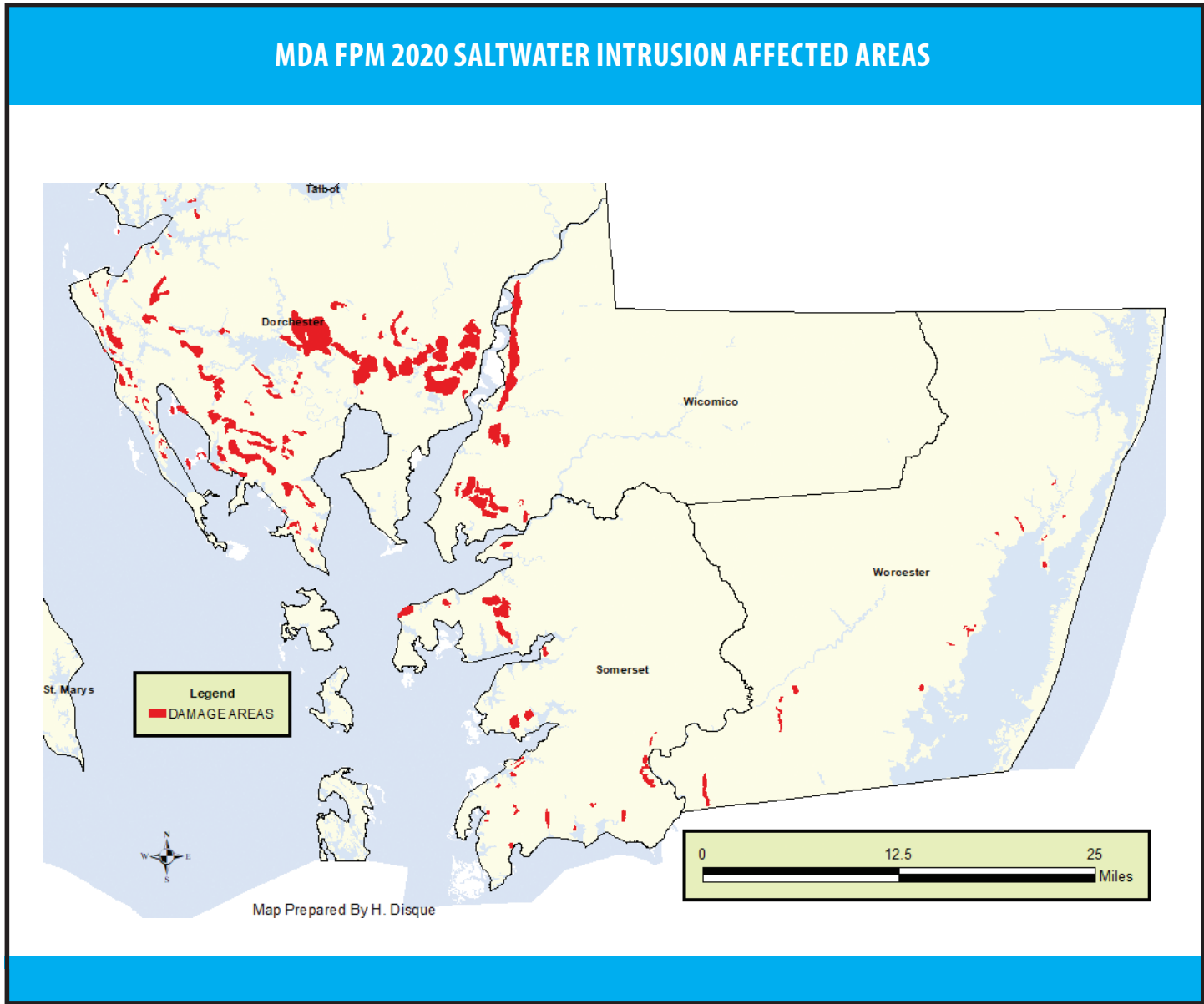
Date: 2/23/2021 Map Prepared By H. Disque

Saltwater Intrusion. In July 2020, a saltwater intrusion delineation flight was flown across the lower Eastern Shore. This flight mirrored one taken in 2017 in order to determine which areas are affected by saltwater intrusion and to map those changes.

In total, 50,365 acres of forest were found to be affected by saltwater intrusion. The affected acres were spread across the lower Eastern Shore. Dorchester, Somerset, Worcester, and Wicomico counties were affected by saltwater intrusion. This is in contrast to 2019 when 10,174 acres were found to be affected by saltwater intrusion. The large majority of the mapped forests were either very severely or severely affected by saltwater intrusion.

MDA Forest Pest Management Saltwater Intrusion Flight Summary

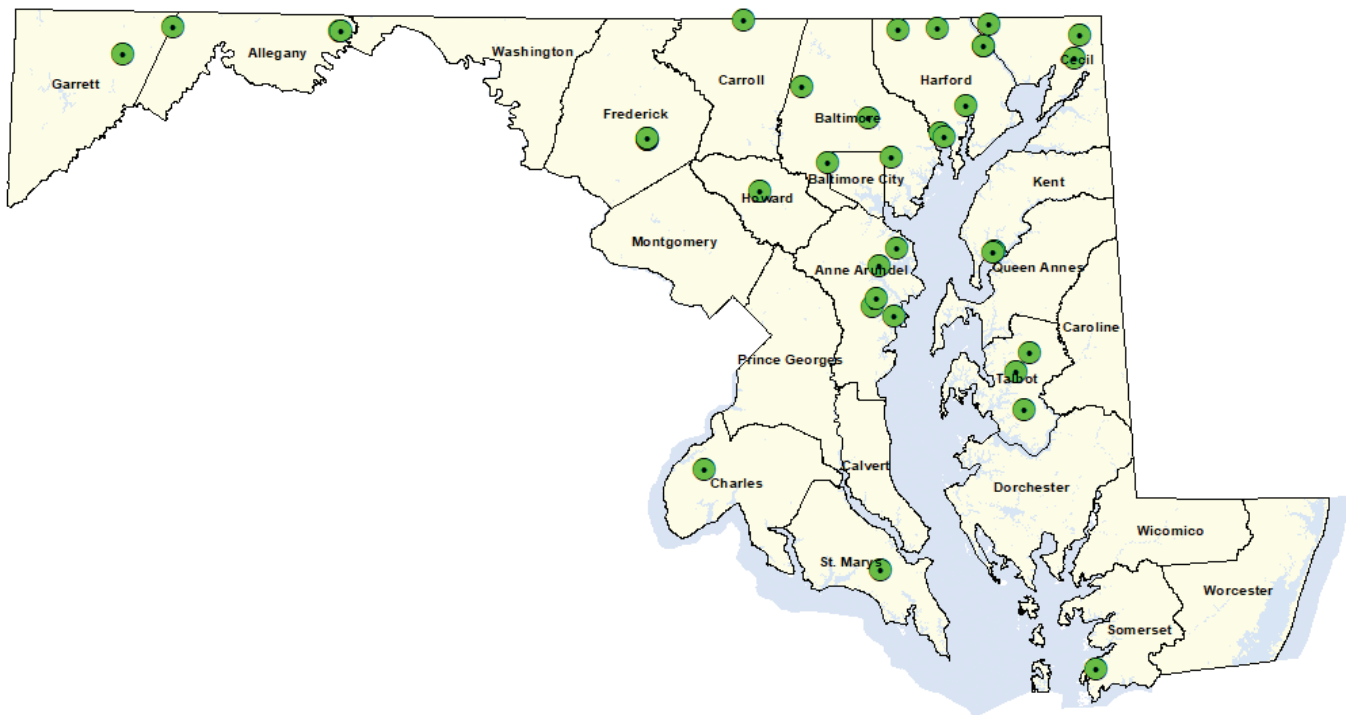
County	Acres Affected
Dorchester	33,963
Somerset	6,008
Wicomico	8,627
Worcester	1,767
Total	50,365



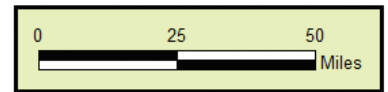
Oak Issues. In Maryland there are significant numbers of mature oak trees in decline and dying. Secondary pests are present, but likely not the cause of mortality. An oak wilt survey has begun and samples are being processed at the UMD Plant Diagnostic Laboratory. Over 89 sites were visited in the summer of 2020, and samples were collected at 33 sites. Samples were taken from leaves, branches, bole, roots, and the soil as available and transported to the UMD Plant Diagnostic Laboratory for testing.

The UMD Plant Diagnostic Laboratory tested for Oak Wilt and several other fungal and bacterial tree pathogens. Lab results found no positive sites for Oak Wilt (*Bretziella fagacearu*). The results did indicate several other pathogens were found including *Phytophthora cinnamomi*, *Phytophthora cactorum*, *Diplodia corticola*, *Xylella fastidiosa*, and *Botryosphaeria dothidea*, among others.

MDA FPM 2020 OAK DECLINE SURVEY RESULTS – OAK WILT

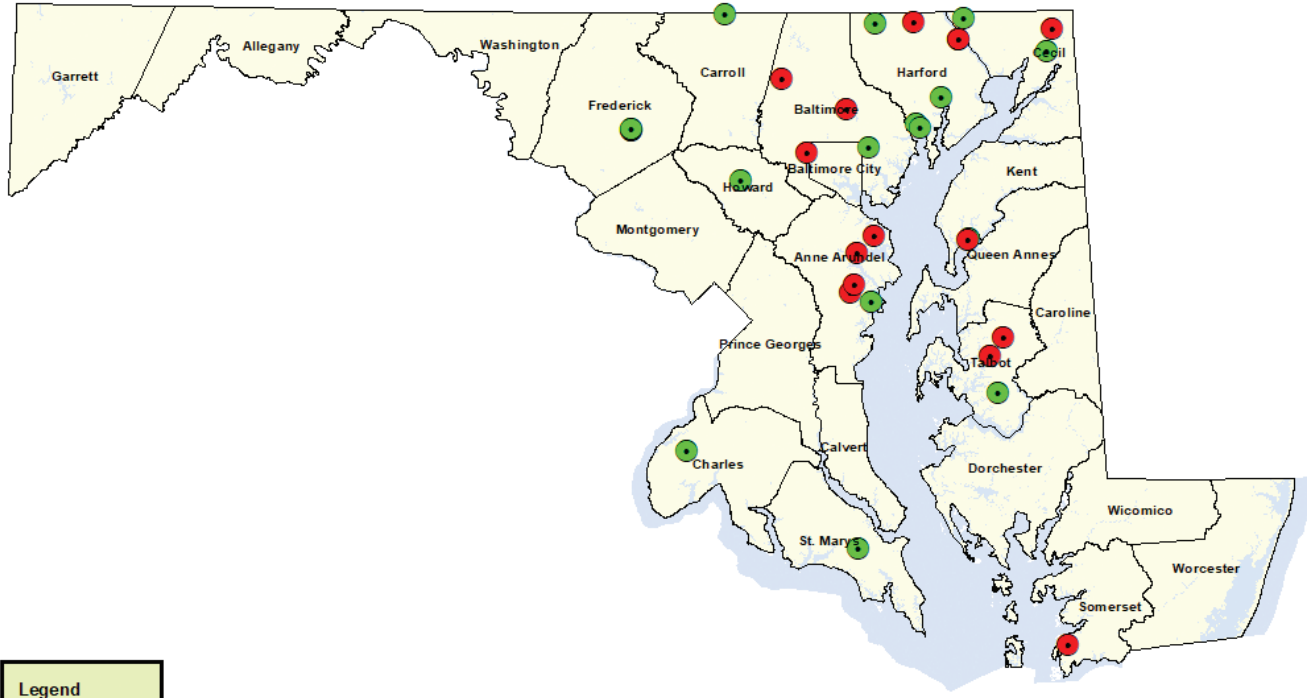


Legend
● Negative



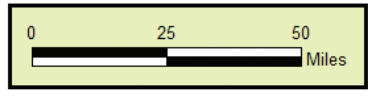
Date: 2/17/2021 Map Prepared By H. Disque

MDA 2020 OAK DECLINE SURVEY RESULTS – XYLELLA FASTIDIOSA



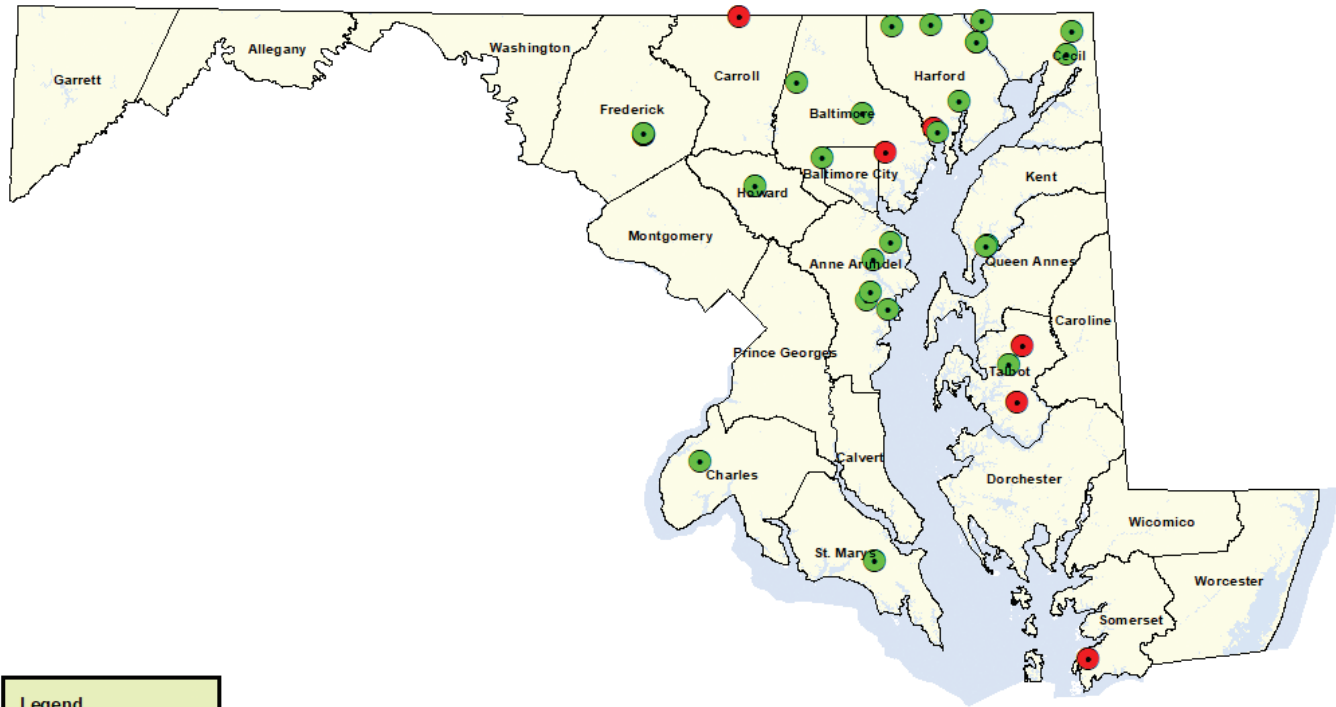
Legend
Xylella

- Negative
- Positive



Date: 2/1/2021 Map Prepared By H. Disque

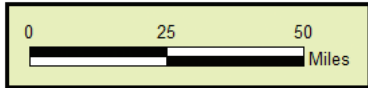
MDA 2019 OAK DECLINE SURVEY RESULTS – *DIPLODIA CORTICOLA*



Legend

Diplodia corticola

- Negative
- Positive



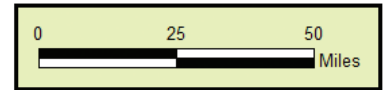
Date: 2/1/2021 Map Prepared By H. Disque

MDA 2019 OAK DECLINE SURVEY RESULTS – *PHYTOPHTHORA* SP



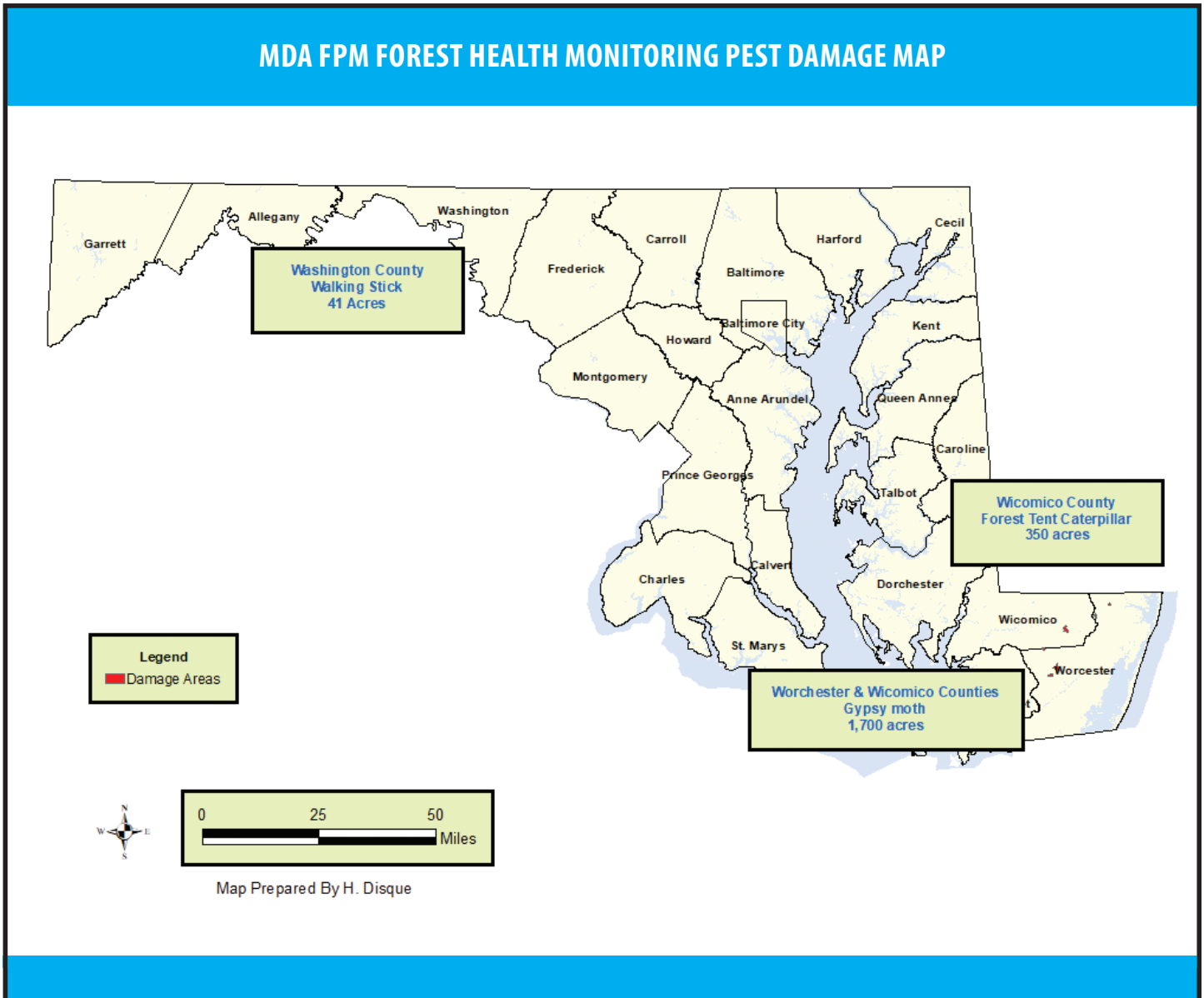
Legend
Phytophthora

- Negative
- Positive



Date: 2/1/2021 Map Prepared By H. Disque

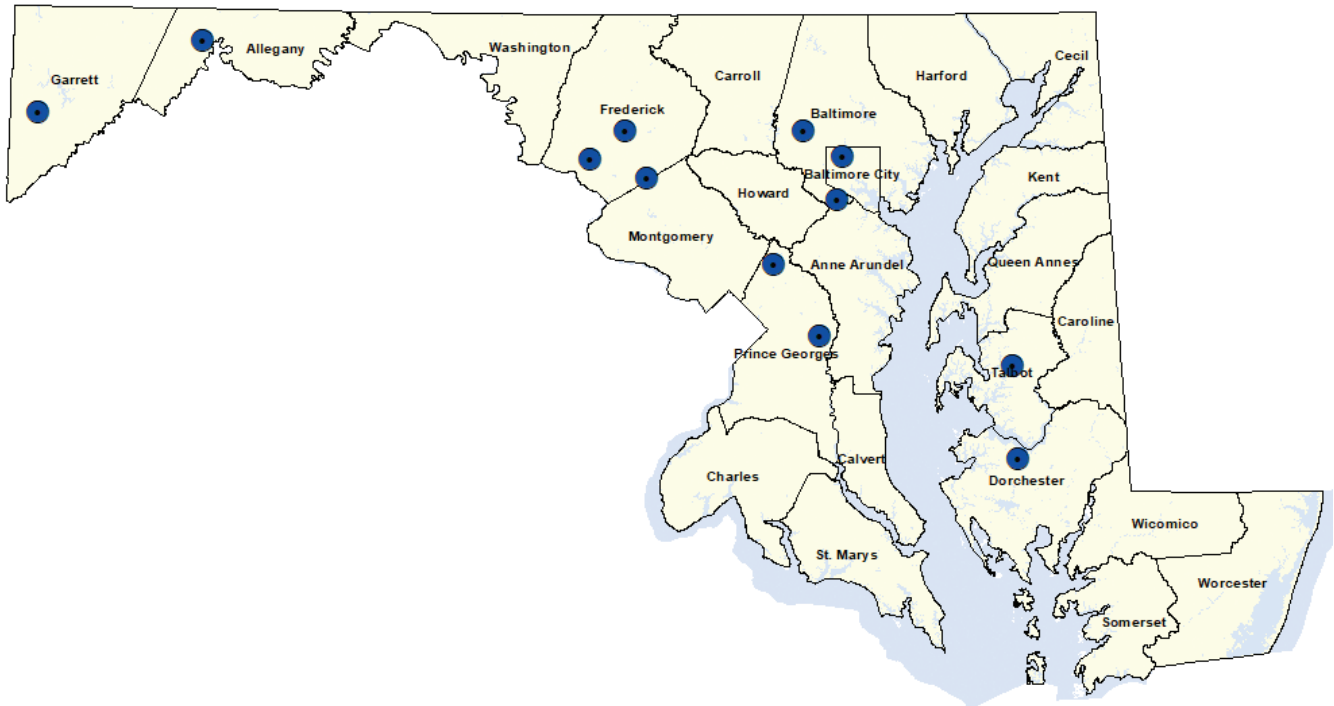
Forest Health Monitoring Pest Damage. Defoliation areas were mapped during an aerial flight, a drone flight, and a ground survey.



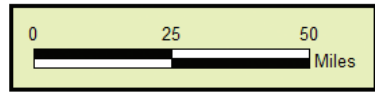
Additional Forest Pest Surveys. Four additional surveys were conducted by Forest Pest Management. These included a survey for redbay ambrosia beetle, a survey for unknown exotic bark beetles also known as Early Detection Rapid

Response (EDRR), an oak pest commodity survey, and a survey for *Phytophthora ramorum* using a stream bait technique. None of these pests or diseases were found in Maryland in 2020.

MDA FPM 2020 EDRR TRAP LOCATIONS

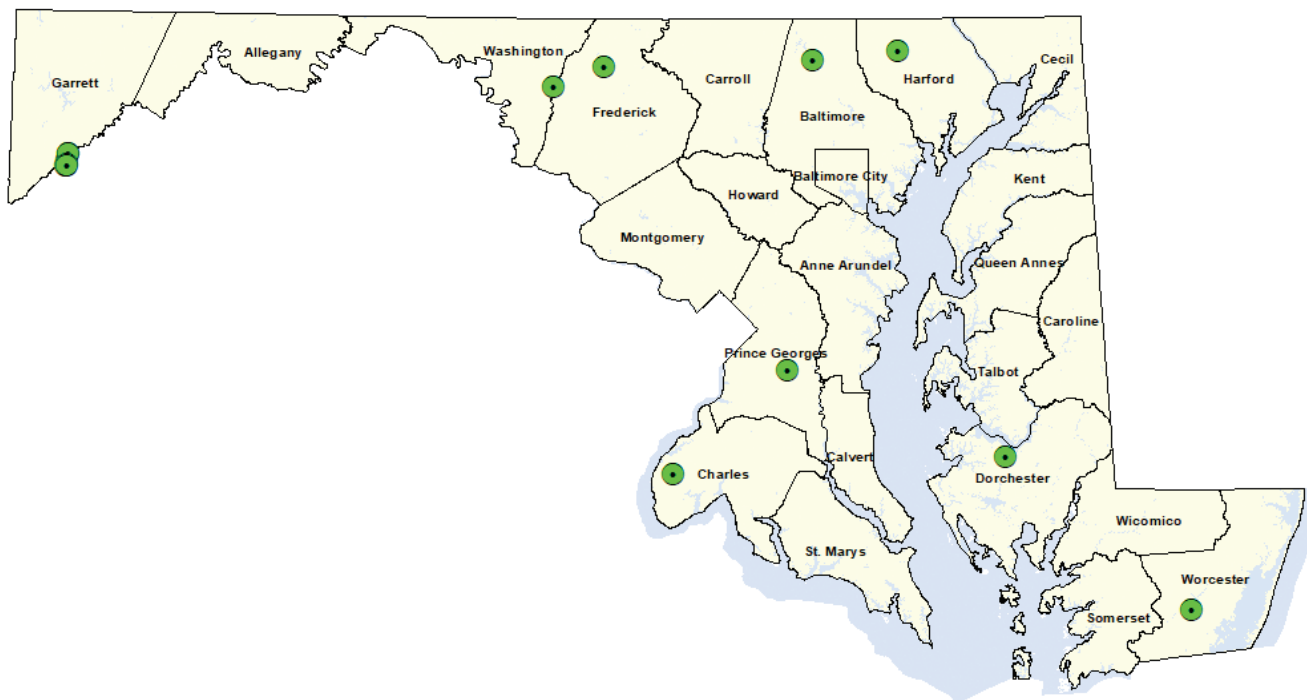


Legend
● EDRR2020



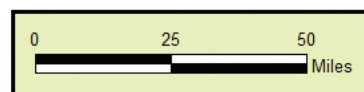
Date: 2/23/2021 Map Prepared By H. Disque

MDA FPM 2020 OAK COMMODITY SURVEY SITES



Legend

- OakCommodity2020

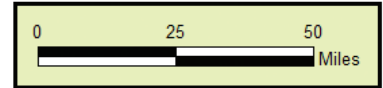


Date: 2/18/2021 Map Prepared By H. Disque

MDA FPM 2020 PHYTOPHTHORA RAMORUM STREAM BAIT SURVEY



Legend
● Stream Bait Survey Locations (All locations negative)



Date: 2/23/2021 Map Prepared By H. Disque

MOSQUITO CONTROL

The department's Mosquito Control Program provides an important public health and quality of life service to Maryland residents in 1,951 communities in 15 counties through mosquito abatement work, arbovirus surveillance, public education, and enforcement.

The program is staffed by 16 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. Participation in Maryland's Mosquito Control Program is voluntary and requires cooperative agreements with local governments and local communities to pay for services. Exemptions are available to all citizens through our website. Our best efforts go toward honoring these requests.

MOSQUITO-BORNE DISEASE SURVEILLANCE

West Nile Virus (WNV). WNV continues to be the mosquito-borne disease of greatest public health importance in Maryland. In 2020, one human case of WNV was reported by MDH. In addition to this human case, three pools of mosquitoes tested positive for WNV. MDA is incorporating a new type of trap, so these numbers are likely to rise in future mosquito seasons.

Eastern Equine Encephalitis (EEE). Eastern Equine Encephalitis (EEE) is one of the most severe mosquito-borne diseases in the U.S. In 2020, EEE was not detected in any mosquito pools surveyed by the department and no human cases were reported in Maryland. EEE has an average mortality rate of 33% 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. 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 Zika after having

traveled to the tropics. There were no travel-related cases of Zika virus in summer 2020. In Maryland, no Zika infections have been 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. In 2020, the total area managed by source reduction projects was 369 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. It is very important that the Mosquito Control Program has this resource available, as it allows them to rectify or prevent issues that create mosquito problems. 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 zones.

Mosquito Control continued its annual inspections of the Crisfield city dike system. Mapping is still ongoing. The program mapped areas in need of future repairs. In addition to the excavator, the department also used an all-terrain ATV for personnel and equipment transport to remote areas of this system. MDA 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 habitats in the Crisfield community. These efforts not only prevent mosquito breeding, but also prevent property damage.

BIOLOGICAL CONTROL

In an effort to control mosquito populations, MDA uses several approaches as part of its IPM program. One component of this program is the use of the native mosquitofish 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 by the Mosquito Control Program are reared in a facility at the Salisbury office. From there, the fish are transported and stocked into suitable habitats,

such as stormwater management facilities, closed ditches, or artificial containment sites. These areas are inspected by MDA 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 2020 mosquito season, 4,440 mosquitofish were stocked in closed pond habitats. The department will continue to monitor and inspect suitable sites to determine where future mosquitofish stocking is necessary.

PUBLIC EDUCATION

Our public education efforts during the 2020 mosquito season were split between media, social media, school, professional associations, and general presentations. The Mosquito Control Program distributed one press release at the beginning of mosquito season urging Marylanders to rid their properties of mosquito breeding sites. Due to the COVID-19 pandemic, the Mosquito Control Program's spray season had a delayed start. Press releases were sent to the media, stakeholders, and constituents every time there was an unscheduled mosquito control spraying due to a public health concern. These messages along with others about protecting yourself from mosquito-borne and tick-borne illnesses were posted on the department's social media pages throughout the season. Program staff attended numerous community meetings and responded to complaints in the central part of Maryland and on the Eastern Shore.

In Prince George's County, the program held learning forums where staff educated government officials, teachers, and citizens on MDA's Mosquito Control Program and how to practice mosquito control at home. Staff also did presentations for two university classes.

Public education continues to be an important part of MDA's Mosquito Control Program, especially with the continuing

problems created by the introduction and spread of the Asian tiger mosquito, the recurrence of WNV, and 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 for a modern mosquito control program. The pilot is also the administrator for the aerial spray program.

The aerial spray season began in April 2020 with applications of biorational larvicide to 5,732 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 2020, 115,718 acres were treated by aircraft, the majority for control of adult mosquitoes. MDA's Mosquito Control Program treated mostly saltmarsh species in 2020. Precision navigation and flow control equipment are critical for the safe and efficient aerial application of insecticides. The program uses Ag-Nav Guia, a state-of-the-art GPS-based navigation system, for all aerial applications of insecticides. 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% 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 2018 – 2020

Activity	CY 2018	CY 2019	CY 2020
Communities Participating in Mosquito Control Program	1,854	2,491	1,951
Number of Light Trap Nights	2,358	2,381	2,051
Percent of Light Trap Nights Below Threshold	946%	66.36%	1,359
Number of Landing Rate Counts Performed	15,162	18,738	16,401
Percent of Landing Rate Counts Below Action Threshold	19.91%	33.25%	33.68
Number of Public Service Requests	5,256	3,133	2,298
Number of Inspections by Request	1,449	962	945
Number of Mosquitofish Stocked	600	4,610	4,440
Acres Managed by Open Marsh Water Management	1,018	647	369
Acres Treated with Insecticide	1,305,790.27	1,230,684.35	1,021,610.1
Acres Treated for Mosquito Larvae	7,014.87	617.95	6,056.54
Acres Treated for Adult Mosquitoes	1,298,783.50	1,230,246.4	1,015,557.17
Acres Treated by Aircraft	213,334	82,597	115,718
Acres Treated by Ground Equipment	1,092,456.27	1,263,080.36	905,892
Number of Mosquitoes Tested for Arboviruses	17,890	18,401	4,440
Number of Human Cases of West Nile Virus Statewide	46	6	1
Number of Cases of Arbovirus in Domestic Animals	6	1	0
Number of Mosquito Pools Positive for Arbovirus	4	11	3

PESTICIDE REGULATION

The Pesticide Regulation Section 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 section contains five major programs: Pesticide Applicator Certification and Training; Pesticide Use Inspection and Enforcement; Pesticide Technical Information Collection and Dissemination; IPM in Schools and on School Grounds; and Special Programs.

PESTICIDE APPLICATOR CERTIFICATION AND TRAINING

Two types of pesticide applicators are certified by the Pesticide Regulation Section, 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.

In FY21, MDA's Pesticide Regulation Section accomplished the following:

- Certified 85 new private applicators for a three-year period. These new private applicators passed a closed book examination administered by section personnel.
- Renewed 1,110 private applicator certificates; 5,844 commercial, public agency, and consultant applicator certificates; 1,978 business licenses; 219 public agency permits; 183 dealer permits; and registered 10,459 pesticide applicator technicians.
- Approved and monitored 85 private applicator recertification sessions conducted by the UME, MDA, or the pesticide industry.
- Certified 154 new commercial pest control applicators and consultants in one or more of the 13 categories of pest control. These new commercial pest control applicators met the minimum experience of education requirements and passed a written certification examination.

In FY21, there were 5,844 commercial, public agency applicators, and consultants. Twelve exam sessions were held, during which 2,041 exams were administered to 639

applicants. Due to COVID-19 restrictions, all exams were held socially-distanced outside in the parking lot of MDA's headquarters. Staff utilized Eventbrite to provide "tickets" for all applicants. Staff pre-assembled exam packets and provided them to the applicants as they entered the parking lot. Exams were taken in the applicant's vehicle. Certified commercial applicators are required to participate in at least one MDA-approved training session each year in order to renew their certificate. The Pesticide Regulation Section approved and monitored 506 recertification training sessions for commercial and private pesticide applicators that were conducted by the pesticide industry, UME, or MDA. In FY21, a total of 3,733 applicators were recertified.

During FY21, the Pesticide Regulation Section licensed 1,978 commercial and not-for-hire businesses to apply pesticides and to perform pest control services. The section issued 219 public agency permits to government agencies that apply pesticides. The section also issued 37 pest control consultant licenses. A total of 10,459 registered employee identification cards were issued in FY21. The employees of pesticide businesses and public agencies are registered to apply pesticides under the supervision of certified applicators. The section issued 219 dealer permits to businesses that sell restricted-use pesticides.

At the end of FY21, 1,200 businesses have not yet renewed their licenses.

PESTICIDE USE INSPECTION AND ENFORCEMENT

In addition to enforcing state pesticide laws, MDA enforces federal pesticide laws under a Cooperative Enforcement Agreement with the 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 inspectors. Due to COVID-19 restrictions and staffing, numbers continue to remain lower than average from pre-pandemic years. In FY21, 481 routine business inspections and 40 complaint investigations were performed. Of the inspections conducted, 96 violations were cited. Five civil penalties were issued, one as a result of a violation cited during a complaint investigation and four to unlicensed businesses.

PESTICIDE TECHNICAL INFORMATION COLLECTION AND DISSEMINATION

A list of pesticide sensitive individuals was first compiled in 1989. During FY21, MDA registered 100 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 MDA's website. This database provides information to applicators and the public about pesticides that may be legally sold, distributed, and used in Maryland along with 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 (IPM) IN SCHOOLS AND ON SCHOOL GROUNDS

MDA's Pesticide Regulation Section continues to promote and support implementation of IPM programs in public schools. Regulation that requires schools to develop and implement notification and IPM plans for indoor pest control took effect in 1999, and regulations for notification and IPM plans for school grounds took effect in 2002. Staff provided technical assistance in the development of the plans and distribution of information on potential adverse effects of pesticides applied. Pesticide Regulation staff continued to work with Maryland public school districts on implementation of IPM plans on school property. During FY21, Pesticide Regulation inspectors conducted 56 IPM inspections at Maryland public schools. Since 2002, more than 1,000 schools have been inspected for compliance.

TRAINING EVENTS

During FY21, MDA's Pesticide Regulation Section enforcement and compliance staff attended the EPA Region 3 Pesticide Inspector's Workshop held virtually. The agenda for this meeting included health and safety information regarding

pesticides as well as respirator fit tests via a mobile unit that came to MDA. In addition, one inspector attended the virtual Pesticide Inspector Residency Training. All of these trainings mentioned are required for MDA's Pesticide Regulation inspectors to maintain their federal credentials per the operating agreement with EPA Region 3.

OTHER ACTIVITIES

In FY21, the Pesticide Regulation Section continued its partnership with FieldWatch. FieldWatch is a pesticide sensitive crop locator database which has taken the place of MDA's outdated Pesticide Sensitive Crop Locator Map. Not only does the agreement include FieldWatch, it also comes with DriftWatch, a cropping database, and BeeCheck, a program that allows beekeepers to input colony locations. Both DriftWatch and BeeCheck show locations of crops and honey bee colonies that are sensitive to pesticide damage so that pesticide applicators can avoid these areas while spraying pesticides on nearby properties. Information contained within FieldWatch is voluntarily provided by the beekeeper or grower of the sensitive crop. In FY20, there were 220 registrations accepted, 161 honey bee colonies, and 59 sensitive crops.

The MDA's Pesticide Container Recycling Program is conducted annually from June through October and provides farmers, pesticide licensees, and permittees an opportunity to recycle their clean empty pesticide containers. Pesticide Regulation inspectors host drop-off events in Frederick, Harford, Kent, Montgomery, Talbot, Washington and Wicomico counties. In addition, MDA works with 23 private cooperators to collect empty pesticide containers. These containers are collected by a contractor provided by the Agricultural Container Recycling Council. During FY21, 72,780 clean empty pesticide containers were collected, yielding 60,000 pounds of recyclable plastic. Since the program's inception in 1993, MDA has collected over one million containers yielding nearly 1.2 million pounds of plastic.

The Pesticide Regulation Section also announced its Pesticide Disposal Program during FY21. This voluntary program provides farmers and producers with an opportunity to safely dispose of any unwanted, unused, banned, or expired pesticide materials at no cost. Participating farmers and producers registered for the program in FY21 and throughout the beginning of FY22. Pesticide pickup from a licensed hazardous waste hauler was set to begin in October 2021.

STATE CHEMIST

The State Chemist Section protects the public and the environment by ensuring that pesticide products distributed within the state are properly formulated and labeled. This is accomplished through inspection, education, technology, and administrative review.

The State Chemist Section ensures consumer protection in the fertilizer and soil conditioner marketplace by verifying the ingredients in these products. This section also monitors safety in the storage, handling, and use of fertilizer material, including anhydrous ammonia, to protect all who come in contact with the product and to safeguard the water quality of the state.

Additionally, the State Chemist Section also assures that animal feeds, including pet foods, are correctly labeled, nutritionally-sound for their intended use, and free of adulterants and unwanted contaminants. Enlisting the involvement of industry, consumers, veterinarians, and state and federal regulators, the State Chemist Section investigates animal deaths, complaints of feed-related illness in animals, and other adverse effects suspected to be caused by feed.

REGISTRATION OF PRODUCTS

Pesticide products, commercial feeds, fertilizers, fertilizer/pesticide combination products, 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 CY20, the section registered: 13,143 pesticide products; 18,119 commercial feeds; 4,455 fertilizers; 461 fertilizer/pesticide mixtures; 135 liming materials; and 98 soil conditioners. MDA inspectors also brought 108 previously unregistered products into compliance. **Please see Table 1.**

INSPECTION

MDA 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 CY20, the State Chemist Section inspectors performed 778 on-site inspections. **Please see Table 2.**

STATE CHEMIST SECTION ONLINE REGISTRATION PORTAL

The Maryland Department of Information Technology (DoIT), NIC Maryland, and MDA's State Chemist Section, developed a new online platform for the registration of pesticides and animal feeds. Initial planning meetings started in July 2016 and culminated in the pesticide renewals going live for the 2018 registration year. Approximately 90% of pesticides were renewed through the NIC portal. There are still some registrants that cannot renew online. The online renewal percentage for animal feeds is approximately 80%. The system, both what registrants use and what the State Chemist staff use, are constantly being improved for better efficiency and usability. The remaining commodities will be put in the pipeline when most bugs in both systems are worked out. 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 the following: 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

MDA's laboratory is staffed with chemists and technicians who have expertise 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. The laboratory staff provides reliable scientific data that is used to assist farmers and to initiate or support regulatory actions against products that violate state and federal agricultural and environmental

laws. The laboratory also provides support to MDE, DNR, USDA, and the EPA. **Please see Table 4.**

RAW MILK PET FOOD

Raw milk for pet food is an up-and-coming market in Maryland. The program has seen an increase in the number of registrations for this commodity. MDA 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 is not 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 16 registrants.

HOMELAND SECURITY

Ammonium Nitrate - Potential Explosive for Terrorist Activities. MDA 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 in 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. The laboratory successfully identified the toxic materials in the check samples. The toxins and chemicals include heavy metals, ricin, alpha amanitin, melamine, mycotoxins, heavy metals, tetramine, cyanide, sodium fluoroacetate, alkaloid toxins, and pesticides.

The laboratory has been called upon to analyze samples for the FDA's Baltimore-District Office as an overflow capacity laboratory. The department currently 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 FDA and the department are concerned about the presence of various pathogenic organisms in dog and cat food. The FDA has indicated that between June 2017 and August 2020, 20 pet food manufacturers were required to remove products from the marketplace 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 countertop 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 CY21, MDA scientists and technicians routinely screened 42 pet food products collected by the inspection staff from warehouses, distributors, and retail outlets. Products found to contain pathogens are subject to removal from the marketplace via stop sale orders and recalls. The three principal pathogens of concern at this time are Salmonella sp., Listeria sp., and E. coli. Screening procedures are used by federal regulatory agencies based on DNA identification, bioluminescence, and other established techniques. Twenty samples of fresh and frozen pet food, pet treats, and pet nutraceuticals were screened as part of State Chemist's FDA contract for Salmonella sp. Out of the 42 samples analyzed, one was found to be positive. State Chemist isolated the Salmonella sp. to send to the FDA District Laboratory in Denver for serotyping and whole genome sequencing.

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

Samples analyzed were finished feeds. Results from analysis

indicated that the overall mycotoxin contamination was low, therefore no violations were detected.

Metals in Animal Feeds. 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 FY21, 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.

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 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 UMD's Honey Bee Lab, the State Chemist Section has been supporting the lab through the analysis of pesticides in bee pollen. The UMD Honey Bee Lab has diverse personnel with multidisciplinary scientific backgrounds. Research in the laboratory is focused on an epidemiological approach to honey bee health.

Major mechanisms that are responsible for continued high-loss levels in honey bee populations include pests and pathogens associated with honey bees, 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 honey bee colonies in the United States. Through the BIP, the largest and most comprehensive honey bee survey in the world was conducted. The data that was compiled through the BIP survey is utilized to conduct research to better improve 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 UMD 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 five 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 phosphorus 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% must be slow release. State Chemist inspectors perform surveillance of retail outlets to ensure that lawn and turf products are complying 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 runoff, 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 an MDA-certified

facility operator to be onsite to oversee the compost manufacturing process. Before becoming certified, an individual must pass an examination. During CY21, 15 people passed the exam. Additionally, individuals passing the exam

must maintain their certification by attending training courses approved by Maryland State Chemist and must participate in facility inspections conducted by State Chemist inspectors.

TABLE 1—CY 2021: REGISTRATION AND ENFORCEMENT

Registration	
Pesticides	13,509
Fertilizers	3,784
Soil Conditioners	233
Fertilizer/Pesticide Mixtures	551
Liming Materials	181
Feeds	18,131
Total	36,389
Companies with Registered Products	2,484
Registrants	1,844
Enforcement - Non Registered Notices Brought Into Compliance	
Pesticides	11
Fertilizers	20
Soil Conditioners	0
Fertilizer/Pesticide Mixtures	0
Liming Materials	2
Feeds	51
Total	84
Enforcement - Non Registered Stop Sales	
Pesticides	11
Fertilizers	20
Soil Conditioners	0
Fertilizer/Pesticide Mixtures	0
Liming Materials	2
Feeds	51
Total	84

TABLE 2—CY 2021: INSPECTIONS

Product Manufacturing Sites Visited [Plants, Warehouses, Retailers]	1,038
FDA Regulation Ruminant Tissue [BSE] Feed Inspections	5
FDA cGMP Inspections	15
USDA/MDA Pesticide Data Program Sites Visited	266
USDA/MDA Pesticide Data Program Samples Collected	510

TABLE 3—CY 2021: REGULATORY ACTIONS

Regulatory Action Stop Sales	
Active Ingredient Deficiencies	
Pesticides	0
Fertilizers	11
Feeds	15
Active Ingredient Over Formulations	
Pesticides	0
Fertilizers	11
Feeds	0
Mycotoxins in Feeds	2
Label Violations	45
Phosphorus Levels in Turf/Lawn Fertilizers	0
Regulatory Action Warnings	
Active Ingredient Deficiencies	
Pesticides	0
Fertilizers	13
Feeds	2
Active Ingredient Over Formulations	
Pesticides	0
Fertilizers	13
Feeds	4
Mycotoxins in Feeds	0

TABLE 4—CY 2021: LABORATORY ANALYSES PERFORMED

	Samples Collected	Number of Analyses
Pesticides	159	191
Fertilizers	284	653
Liming Materials	10	19
Feeds and Pet Foods	435	1,690
Feed – Microbiology	19	57
Broiler Feeds for Phytase	52	52
Livestock Feeds – Drugs, Additives, Mineral Supplements, Ingredients	390	830
Toxic Metal Screen	46	370
Maryland Bee Pollen Survey	2	398
EPA (Pesticide Regulation – Maryland)	140	14,293
Food Emergency Response Network of Federal & State Laboratories	16	16

TABLE 5—CY 2021: PRODUCT SALES IN TONS

Fertilizers	445,566
Fertilizer/Pesticide Mixtures	6,578
Soil Conditioners	264,769
Compost	19,139
Liming Materials	145,404
Total	881,457

TURF AND SEED

Seed is the single most important input to any agricultural system. To be successful, a grower must begin with quality seed. MDA'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 consumers. Today's seed industry exists in an environment of rapid change. The continued development of biotechnology and the expansion of genetically modified organisms (GMOs) has had an enormous effect on the production, distribution, and marketing of seed as well as on state seed programs nationwide. 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

Maryland's State Seed 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. SHA relies upon the laboratory to test all grass, wildflower, shrub, and other seeds planted along Maryland's highways. Maryland farmers participating in the department's Cover Crop Program use the laboratory to ensure that the seed they plant meets the quality standards required for the 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. Additionally, the laboratory tests seeds used on wetland mitigation, restoration, and conservation projects.

A well-trained staff is key to a successful laboratory operation. The Association of Official Seed Analysts (AOSA) maintains an accreditation program for seed analysts in official laboratories throughout the U.S. Analysts who pass rigorous tests, which include both written and practical exams, are certified as official purity and germination analysts. Currently,

six 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 across 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 seeds offered for sale in the state to be labeled accurately. This includes: agricultural, vegetable, flower, lawn, and turf seed; seed of trees, shrubs, native species, and 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 MDA. Maryland relies heavily on other states and countries, where climates are better suited for seed production, to supply its seed needs. Thus, it is important that Maryland maintains a strong and effective regulatory program in order to prevent low-quality seed from entering the state. MDA inspects both retail and wholesale seed dealers statewide. 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 relabeling, 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. Large investments in biotech research by private companies are increasing, driving the demand for traditional certification services down and decreasing the involvement of public institutions which have been the primary source for 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 MDA for expertise in field inspections, sampling, and laboratory analysis for quality control. MDA anticipates that quality control inspection acreage will rise 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, which has helped strengthen Maryland's agriculture industry and the state economy. MDA cooperates with the Maryland Crop Improvement Association, the Maryland Agricultural Experiment Stations, and UMD in the production and distribution of Maryland foundation seed. Much effort is spent maintaining the genetic purity of foundation seeds of public varieties that are 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. MDA's oversight of this process ensures that consumers receive quality seed. All seed used on SHA 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 an MDA 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 MDA 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.

TURF CERTIFICATION

Maryland's turf certification program serves as a national model. Growers must plant varieties recommended by UMD based on performance trials conducted in the region. All seed used in this program is tested by the Maryland State Seed Laboratory and mixed under the supervision of MDA 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.

MARYLAND INDUSTRIAL HEMP RESEARCH PILOT PROGRAM

The purpose of the Maryland Industrial Hemp Research Pilot Program is to authorize and facilitate the research of industrial hemp and any aspect of growing, cultivating, harvesting, processing, manufacturing, transporting, marketing, or selling industrial hemp for agricultural, industrial, or commercial purposes. This program requires farmers to partner with institutes of higher education to grow industrial hemp under a research program. During FY21, industrial hemp was grown in Maryland for general commercial activity and as part of a research project. Farmers were allowed to sell their crop for profit at the end of the growing season. Maryland currently does not limit acres or number of applications for this pilot program. The Turf and Seed Section approves farmers and registers the fields where industrial hemp is grown. During the 2021 growing season, 36 farmers had research projects with six different institutions to grow and conduct research on industrial hemp.

MARYLAND HEMP FARMING PROGRAM

Maryland's State Plan for Hemp Farming was approved by the USDA, allowing MDA to license farmers to grow hemp without a research project. In addition, this established hemp as an agricultural crop. In order to grow hemp a farmer must be licensed by MDA and register their fields. During the 2021 growing season, 63 farmers registered under the Hemp Farming Program.

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 dependent on weather, customers rely on MDA 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 OBJECTIVE

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 2021
Outcome: Percent of Seed Lots Found to be Correctly Labeled	90%

TURF AND SEED ACTIVITIES: 2019 - 2021

	2019	2020	2021
Field Inspections			
Acres of Turf Inspected	4,749	3,617	5,123
Acres of Crop Seed Inspected	5,978	4,037	4,792
Supervised Mixing			
Pounds of Seed Mixed (thousand)	2,081	2,035	2,109
Retail and Wholesale Seed Inspections*			
Number of Lots Sampled	453	364	234
Number of Regulatory Seed Tests Conducted	1,435	964	604
Seed Testing			
Samples Tested	2,947	2,790	2,758
Service Seed Tests Conducted	4,388	4,191	4,103

**Note: Retail and Wholesale Seed Inspections were impacted by closures due to the COVID-19 pandemic and employee health and safety protocols.*



2021 Annual Report | Office of Resource Conservation

The department's Office of Resource Conservation partners 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, financial, technical assistance, and regulatory programs to help farmers install conservation practices on their farms that meet Chesapeake Bay restoration

goals. Staff work with local, state, and federal agencies to carry out policies and programs established by the SSCC.

The Office of Resource Conservation manages the following program areas: Program Planning and Development, the SSCC, the Nutrient Management Program, Conservation Grants, District Operations, and the Watershed Implementation Program.

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. Program partners include soil conservation districts along with public, private, agriculture, and natural resource organizations. The section provides staff support to the 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. Examples include technologies that generate energy from animal manure, reduce on-farm waste streams, and repurpose manure by creating marketable fertilizer products and by-products. Grants awarded through the Animal Waste Technology Fund are part of the state's ongoing commitment to manage animal manure, protect natural resources, and pursue renewable energy sources.

In FY21, the fund:

- Defined animal waste to include *"any waste stream generated by an on-farm animal or waste generated through an animal production process involving Maryland livestock."*
- Received 13 bids in response to its annual request for

proposals. The bids were reviewed by a seven-member technical review subcommittee and an advisory committee. Two projects were selected for awards:

- Sustainable Chesapeake — in partnership with the Maryland & Virginia Milk Producers Cooperative and the Alliance for the Chesapeake Bay — will demonstrate innovative technologies that address dairy manure management and dairy manure injection at farms in Frederick and Carroll counties. The project will also expand manure separation capabilities at a farm in Cecil County.
- Earthcare, LLC was approved for a project to construct a regional scale drying and gasification facility for poultry litter in Wicomico County.
- The fund continues to support five additional projects approved in previous years.
- To date, \$10.7 million in grants has been issued to approved projects.

Geographic Information Systems (GIS). GIS is a geospatial system that connects data to a place on earth. It creates, manages, analyzes, and maps all types of data. Data is connected to a map and integrated with descriptive information. This provides a foundation for mapping and analysis to understand patterns, relationships, and geographic context. GIS improves communication, efficiency, and resource management. It also informs decision-making.

In FY21, GIS staff:

- Offered the following training sessions:
- ArcGIS Online (AGOL) Basics
- Transitioning from ArcMap to ArcGIS Pro
- Getting Started with ArcGIS Pro
- Updated all MDA-hosted spatial datasets and web map applications with the most current data and enhanced tools.
- Continued to provide technical assistance on GIS capabilities and provided datasets and maps to MDA programs as needed.
- Participated in the Environmental Systems Research Institute's (ESRI) Massive Open Online Courses (MOOC) and ArcGIS Online Early Adopter program.
- Attended numerous conferences and workshops; continued to participate in an inter-agency technical committee that implements policies on the transparency, availability, and quality of spatial data in Maryland.

Maryland Healthy Soils Program. Established by Maryland law in 2017, Maryland's Healthy Soils Program charges the department to develop a roadmap to improve the health, yield, and profitability of soils; increase biological activity and carbon sequestration in agricultural soils; and promote education and the adoption of healthy soil practices.

In FY21, the program accomplished the following:

- Held six meetings with the 32-member Soil Health Advisory Committee. The group's mission is to guide the development and framework of the Maryland Healthy Soils Program to achieve its legislative charge.
- Enrolled over 2,100 acres in a pilot project supported by a grant from the National Fish and Wildlife Foundation to promote the use of soil health practices. Enrolled farms receive financial and technical assistance to implement qualifying conservation practices to promote soil health. Assessments are conducted on enrolled fields to increase understanding of soil health measures.
- Farmers in Caroline, Kent, Queen Anne's, and Talbot counties continued to show strong interest in a 2018 Regional Conservation Partnership Program (RCPP) grant

opportunity that supports the installation of practices that increase soil organic matter, reduce erosion, promote nutrient cycling, improve water retention, and reduce competition from weeds. Funds from this grant are now fully obligated, three years ahead of schedule.

- Program staff continue to represent Maryland at the U.S. Climate Alliance; staff continue to promote the Healthy Soils Program as a part of the climate solution.
- The Healthy Soils Program was included in the state's 2030 Greenhouse Gas Reduction Act Plan as a key strategy to mitigate climate change.
- Information and Education. This program provides creative, editorial, web content, graphics, and production services for the department's conservation programs.

In FY21, program staff:

- Produced annual reports for the Office of Resource Conservation, Conservation Grants, the Nutrient Management Program, and soil conservation districts.
- Developed farmer education and outreach programs to promote the Cover Crop Program, MACS Program grants, Manure Transport Program, manure injection grants, Maryland's Conservation Buffer Initiative, Conservation Reserve Enhancement Program (CREP), Maryland's Healthy Soils Program, Equine Outreach Program, the Animal Waste Technology Fund, and the Phosphorus Management Tool.
- Developed the "Conservation Buzz" monthly email newsletter.
- Produced the winter and summer issues of "Maryland Nutrient Management News."
- Developed a manure education program to educate citizens on how farmers use manure; updated the Backyard Actions for a Cleaner Chesapeake Bay education series; updated the interactive Welcome to Your Watershed web game; promoted the Maryland Envirothon; and provided web-based education materials to soil conservation districts and the UMD Master Gardeners.

STATE SOIL CONSERVATION COMMITTEE (SSCC)

Established in 1938, the 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 and advises the Maryland Secretary of Agriculture on these matters. Importantly, the committee serves as a forum for all agencies involved in protecting natural resources.

In FY21, the SSCC:

- Recommended that natural filters qualify for state cost-share assistance. Supported cost-share for livestock fencing systems that improve pasture management. These actions will help the state meet its Chesapeake Bay cleanup goals.
- Supported 100% cost-share assistance for high-priority conservation practices.
- Received updates from the MHIB about growing demand

for conservation programs within the equine industry. Outreach and engagement with these operations will be an important conservation opportunity.

- Received updates on: Maryland's progress in meeting agricultural water quality goals for the Chesapeake Bay; the status of nutrient loads and reductions required for the Conowingo Dam; and recruitment efforts for technical field staff.
- Received training on Maryland's Open Meeting Act and a demonstration of new conservation planning tools.
- Received an update from MDE and USDA's Natural Resources Conservation Service on future roles and responsibilities of soil conservation districts in the small pond approval process.
- Facilitated a roundtable with members and soil conservation district managers to discuss and prioritize training needs across the conservation partnership. These trainings will supplement a leadership assessment undertaken in 2020.

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 at least \$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.

Phosphorus Management Tool (PMT). To further protect water quality, farmers with fields containing high soil phosphorus levels are in the final stages of a multi-year transition to the PMT. over a period of several years. This transition will be completed by July 1, 2021. The PMT identifies fields at risk for phosphorus loss and prescribes best management practices that prevent the additional buildup of soils that are already saturated. Farms with soils that are over certain thresholds are limited in how much phosphorus can be applied to their fields. High soil phosphorus levels are typically found on farms that have used manure or poultry litter as a crop nutrient over an extended period.

PMT Transition Advisory Committee. This committee provides guidance for the program. It was established in 2015 and is chaired by the Maryland Secretary of Agriculture. The committee received numerous PMT progress updates throughout the year, including a final PMT economic analysis conducted by Dr. Memo Diriker of Salisbury University's Business Economic and Community Outreach Network (BEACON). In December 2020, the committee voted for a second time not to delay implementation of the PMT and

the Secretary agreed with this recommendation. The PMT Transition Committee will remain active until at least July 1, 2022, to ensure a smooth transition during the PMT's first year of full implementation.

As of June 30, 2021:

- The program compiled soil phosphorus data for 1,120,668 acres of regulated farmland. Approximately 20% of farm fields tested have soil phosphorus levels that require use of the PMT. State law requires soil phosphorus data to be collected every six years beginning in 2015. Plans are underway for the next round of soil data collection in September 2021.
- The program continues to target farms that have not submitted soil data for audits and inspections.
- Research moved forward on a five-year study of phosphorus loss risk assessment tools conducted by UMD and funded by the Nutrient Management Program. The study will provide important information gathered through field tests. UMD also received a small federal grant to supplement the research.
- Funded a 2-year research study to help determine the value of soil additives in preventing soil phosphorus loss. The study is being conducted by the UMD Center for Environmental Science.
- New legislation required more detailed reporting of poultry litter, manures, bio-solids, and other organics transported. Sending and receiving farms or alternative users of transported organic products must now provide a detailed accounting of the organics transported. This will allow improved tracking of organics transported throughout the state and region.
- Following two years of planning and development, the program introduced electronic reporting of Annual Implementation Reports through the Maryland OneStop portal. Approximately 20% of regulated farmers took advantage of the new electronic reporting option, with many users giving the new system outstanding reviews.
- Program staff reviewed nutrient management plans written for farmers to ensure their effectiveness in protecting water quality.

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 UME advisors, certified private consultants, or farmers who are certified to develop plans for their own operations. Farmers are required to update their

nutrient management plans before they expire, submit Annual Implementation Reports summarizing nutrient applications for the previous year, and most importantly, follow their nutrient management plans. The program's team of eight nutrient management specialists analyzes Annual Implementation Reports and conducts site visits to verify that operators are following their plans.

FY21 Enforcement Highlights:

- **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. The program actively works to locate new farming operations and pursues enforcement actions against operators who have not met this initial 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 FY21, approximately 98% of regulated farmers managing about 1.3 million acres of land had submitted these reports. The program granted numerous exceptions due to mail delivery issues, however, 128 operators were fined \$32,000 due to late submissions or failure to submit their annual implementation reports. Most of these operators were non-responsive or failed to cooperate.
- **On-Farm Audits and Inspections.** Enforcement specialists conducted 783 on-farm audits. Most of these audits were conducted in person, however, the program continues to offer virtual reviews as an option. Approximately 68.45% of audited farms were in full compliance at the time of inspection. Follow-up inspections determined that 66 farmers cited had corrected their violations, raising the compliance rate to 77.1% by the end of the fiscal year. The program is actively pursuing full compliance for all audited operations. In FY21, \$7,400 in fines were issued against seven operators for violations.

Certification and Licensing Programs. The following activities took place in FY21:

- **Nutrient Management Exam.** Eleven individuals passed the program's nutrient management certification exam.
- **UMD Consultant Program.** The program funded 20 UME advisors in FY21. These advisors provide farmers with nutrient management plans free of charge.

- **Consultant Certification.** The program certified 11 new consultants to write nutrient management plans for farmers and renewed 118 certifications.
- **Farmer Training and Certification.** Five farmers were trained to write nutrient management plans for their own operations — 35 certifications were renewed.
- **Nutrient Applicator Voucher Training.** The department partnered with UME to conduct a series of statewide voucher training sessions — 684 vouchers were issued/ renewed.
- **Continuing Education.** Sixty-five continuing education events, mostly virtual, were attended by 2,380 individuals.

Turfgrass Nutrient Management Program. Maryland’s Lawn Fertilizer Law requires lawn care professionals who fertilize turf to be certified by MDA 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 UMD fertilizer recommendations.

The following activities took place in FY21:

- **Electronic Reporting.** For the first time, electronic

reporting was offered through the Maryland OneStop portal.

- **Fertilizer Applicator Exams.** Ten professional fertilizer applicator exams were offered across the state and attended by 109 lawn care professionals. The program issued 862 business licenses and 1,435 Professional Fertilizer Applicator Certificates. An additional 1,463 lawn care company employees have been trained to apply fertilizer under the supervision of a certified professional.
- **Training, Certification, and Licensing.** To renew their certificates, professional fertilizer applicators are required to complete two hours of continuing education each year. Six virtual recertification classes were attended by 705 certified professionals. Additional training opportunities were offered by private industry and trade groups. Most of these training sessions were also virtual.
- **Annual Activity Reports.** License holders are required to file an annual activity report with the program by March 1, covering the previous year. In FY21, the program received 795 activity reports representing an 88% compliance rate.
- **Enforcement Activities.** During the year, 202 record reviews were conducted, with 77% of the firms in compliance. Both electronic and on-site reviews were conducted.
- **Homeowner Outreach.** The program continued to educate citizens about Maryland’s Lawn Fertilizer Law through a partnership with the UMD Master Gardeners.

CONSERVATION GRANTS

The Conservation Grants Program is responsible for the management and distribution of grants to Maryland farmers to implement best management practices (BMPs) on their farms to address resource concerns and promote environmental sustainability. The program is funded through a variety of sources including general obligation bonds, the Chesapeake Bay Restoration Fund, the Chesapeake and Atlantic Coastal Bays Trust Fund, and various federal grants that finance highly-valued BMPs included in Maryland’s Chesapeake Bay restoration commitments. In FY21, the program provided Maryland farmers with \$25.2 million in cost-share grants to install 2,114 conservation projects on their farms to prevent soil erosion, manage crop nutrients, and protect water quality.

Maryland Agricultural Water Quality Cost-Share (MACS) Program. MACS helps farmers finance water quality

improvement projects on their farms, invest in sustainable agricultural practices, and comply with federal, state, and local environmental requirements. During FY21, MACS provided Maryland farmers with \$3.9 million in grants to install 257 conservation projects on their farms. Farmers who received these grants invested more than \$900,000 of their own money into these projects.

To further support Maryland’s Phase III Watershed Implementation Plan (WIP), additional changes to the MACS Program were made in FY21:

- **MACS 100% Cost-Share Reimbursement.** This spring, Governor Hogan signed a new law that authorized the department to provide farmers with cost-share assistance that covers up to 100% of eligible costs to install certain

high-priority BMPs on farms. MACS identified 23 practices that are eligible for this new rate. The new rates took effect August 2, 2021.

- **New and Updated BMPs.** The program introduced a new suite of practices that act as natural filters to protect water quality. These include windbreaks, hedgerow plantings, tree and shrub establishment, and silvopastures. Additional BMPs have been updated to include non-exclusion perimeter fencing and interior fencing to support rotational grazing systems. Satellite storage facilities for poultry manure were also cost-shared to help support farmers better manure management. More than 40 BMPs are now eligible for cost-share funding.

Maryland Cover Crop Program. The Maryland Cover Crop Program is our largest and most popular cost-share program. It provides farmers with grants to help offset seed, labor, and equipment costs to plant fall cover crops to control erosion, recycle unused plant nutrients, build healthy soils, and protect water quality in the Chesapeake Bay watershed. During the 2020-2021 planting season, Maryland farmers planted 433,116 acres of traditional cover crops statewide using approximately \$20 million in cost-share grants. This figure does not include cover crops planted for harvest, which are not currently eligible for cost-share grants. The planting was hindered by excessive rainfall and poor field conditions at planting time.

Manure Transport Program. This program provides grants to help haul poultry and livestock manure away from areas with high soil phosphorus levels to farms or alternative use projects that can use the product safely. During the year, the program experienced a significant increase in participation as farmers took advantage of favorable program changes along with an increase in the maximum payment rate to haul poultry manure. In FY21, the transport program provided Maryland farmers with \$1,889,179 in grants to transport 377,215 tons of manure to approved farms and businesses. Delmarva poultry companies contributed \$602,791 in matching funds to transport poultry manure.

Manure Injection Program. Injecting manure into the soil instead of spreading it on top helps prevent nutrient runoff, reduces odors, and preserves beneficial surface residue. In FY21, 50 farmers were awarded \$366,889 in cost-share grants to offset operating costs associated with this practice.

Conservation Reserve Enhancement Program (CREP). Maryland's CREP 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 eligible land that they have agreed to no longer till or graze. In FY21, MACS provided landowners with \$174,038 in grants to install 30 CREP-related projects. Special funds are used to award a \$100 per acre signing bonus to landowners who enroll or re-enroll land in the program. In FY21, landowners were awarded \$156,796 in signing bonuses during a transitional program year.

Low Interest Loans for Agricultural Conservation (LILAC). Low interest loans are available to help farmers install BMPs on their farms, purchase conservation equipment, and adopt new technologies that help protect natural resources and safeguard water quality in streams, rivers, and the Chesapeake Bay. LILAC loans provide farmers with up-front funds needed to bridge the cost-share gap and get a project up and running. LILAC loans may also be used to purchase certain types of equipment to control soil erosion, inject manure into the soil, or manage crop nutrients. Guaranteed by the Maryland Water Quality Revolving Loan Fund, LILAC loans are typically offered at 3% to 4% below market rates and are available at lending institutions statewide. In FY21, the program worked with MDE and local soil conservation districts to approve nine applications totaling \$467,554 in loans. These loans were used to help Maryland farmers purchase conservation tillage and manure handling equipment and install waste storage structures, heavy use areas, and agricultural chemical and handling facilities.

DISTRICT OPERATIONS

District Operations 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 agricultural community.

Technical Assistance. In FY21, the program funded 125 technical positions in local soil conservation district offices.

Soil Conservation and Water Quality Plans. Technical staff worked with farmers to develop Soil Conservation and Water Quality Plans (SCWQPs) to protect natural resources on farms. These plans are required by many state and federal programs as a condition for receiving cost-share funds. MDE requires certain livestock and poultry farmers to implement SCWQPs as part of its Maryland Animal Feeding Operation (MAFO) permit requirements. In addition, SCWQPs are included in Maryland's WIP to restore the health of the Chesapeake Bay. In FY21, 827,879 acres of agricultural land were managed using SCWQPs. Also during the year, technical staff helped farmers install 1,970 BMPs on their farms to control soil erosion, manage nutrients, and protect water quality. These 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, MDA and MDE worked jointly with soil conservation districts to investigate farm management complaints and act against polluters when necessary. In FY21, the program received 12 complaints concerning odors, livestock, manure, sediment, wetlands/stream disturbance, and pond issues. Of these complaints, 10 were corrected or closed, two complaints are pending, and no enforcement actions were initiated.

Agricultural Water Management. Drainage ditches are common on Maryland's Eastern Shore, where 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. District

Operations coordinates the activities of PDAs to ensure that operation and maintenance plans are in good working order to protect water quality.

Permitting and Compliance Assistance. During the year, program staff helped farmers comply with MDE's Animal Feeding Operation (AFO) permit. The General Discharge Permit for AFOs is revised and reissued every five years. It expired on Nov. 30, 2019. The permit now in effect is for the 2019-2024 cycle. In FY21, field staff: prepared Comprehensive Nutrient Management Plans (CNMPs) for farmers; secured cost-share assistance to install BMPs; provided status updates; organized partner-agency site visits; performed site inspections; and conducted pre-transfer analyses to ensure a smooth transition as poultry farms are constructed, transferred, sold, or decommissioned. This year, the program strengthened its communications network and developed new record keeping tools for poultry operations.

Maryland Envirothon. The SSCC and soil conservation districts are primary sponsors of the Maryland Envirothon — an environmental education competition that challenges high school teens to solve complex environmental issues. Students are trained and tested in aquatics, forestry, soils, wildlife, and a special environmental issue that changes every year. They compete at the local, state, and national levels. More than 50 teams from 13 Maryland counties participated in this year's virtual competition. A team of students from Richard Montgomery High School in Montgomery County won the state event and went on to finish ninth at the national competition which included 41 teams from the United States, Canada, and China. The national event was hosted virtually by the Nebraska Association of Resource Districts.

WATERSHED IMPLEMENTATION PROGRAM

This program provides direction and leadership to develop and evaluate strategies to carry out agricultural commitments included in Maryland's WIP to restore the health of the Chesapeake Bay, as required by the Chesapeake Bay Total Maximum Daily Load (TMDL) cleanup plan.

The TMDL requires Maryland and the other Chesapeake Bay watershed states to reduce the amount of nitrogen, phosphorus, and sediment entering the bay by amounts that will allow the estuary to be removed from the federal government's list of "Impaired Waters." Established by the EPA in 2010, the Chesapeake Bay TMDL aims to ensure that all pollution control measures needed to fully restore the health of the bay and its tidal rivers are in place by 2025.

Phase III WIP. Maryland submitted its final Phase III WIP to the EPA in April 2019. The Phase III WIP builds on previous plans and includes considerable public input. The plan's agricultural component was developed based on stakeholder feedback obtained through a series of public meetings held over the summer and fall in every Maryland county. Follow-up meetings were organized to address concerns after stakeholders reviewed the draft plan. Overall, Maryland's WIP III is a solid, realistic, and achievable plan for meeting Maryland's nutrient and sediment reduction goals. The cleanup plan is the first among the bay states to consider the potential impacts of climate change. A midpoint assessment of Maryland's cleanup progress showed that while the state is on track to meet its phosphorus and sediment reduction goals, additional focus is needed to reduce nitrogen. Accordingly, the agricultural component of Maryland's plan focuses on the need to lower nitrogen levels in the bay.

In FY21, the program continued to support local conservation efforts conducted by members of Maryland's Conservation Partnership. The Watershed Implementation Program provided overall guidance on documenting and reporting best management practices installed by Maryland farmers and submitted annual progress reports to the Chesapeake Bay Program.

Agricultural Representation. MDA representatives serve on several Chesapeake Bay Program workgroups. They provide technical information and input concerning restoration goals, policies, programs, and research needed to reduce agricultural pollutants entering the bay and its tributaries.

Nutrient Trading. MDA and MDE continue to work together to foster a voluntary, market-based program to promote nutrient and sediment trading as a viable option for achieving the state's water quality goals. During the year, the online trading platform's agricultural assessment tool was calibrated with the latest Phase 6 version of the Chesapeake Bay Program Watershed Model. The program also worked to incorporate potential carbon sequestration benefits associated with conservation implementation into the trading tool.

Conservation Tracker. This integrated database management system tracks agricultural BMPs installed on Maryland farms to protect and restore the bay. The system tracks both publicly and privately funded BMPs outlined in Maryland's WIP. Information obtained through Conservation Tracker is regularly reported to the Chesapeake Bay Program for use in assessing restoration progress. As part of the Chesapeake Bay TMDL Midpoint Assessment, the department was required to strengthen accountability and transparency of BMPs installed on Maryland farms. In response, the program developed a six-member verification task force to provide an objective, third-party review of all BMPs installed on Maryland farms since 1985. Since 2016, the verification task force has reviewed approximately 17,500 BMPs. This represents 50% of all BMPs implemented since 1985. Of the BMPs evaluated, 81% continue to provide water quality benefits, approximately 16% are no longer present on the landscape, and 3% require maintenance.

Agricultural Certainty Program. This program rewards farmers who install multiple BMPs on their farms to protect natural resources. Participating farmers receive a 10-year exemption from new environmental laws and regulations in return for voluntarily installing conservation measures that help the state meet its 2025 water quality goals ahead of schedule. In FY21, the department continued to promote the program to the farm community and began planning for the next round of required training sessions for the re-calibrated version of its online assessment tool.

Research and Special Projects. The Watershed Implementation Program manages multiple research and technical assistance grants. The projects demonstrate new and innovative ways to improve manure management, reduce nutrient runoff, control soil erosion, and safeguard water quality.

MDA BUDGET ALLOCATIONS FOR FY21

MDA BUDGET ALLOCATIONS FOR FY21

	GENERAL	SPECIAL	FEDERAL	BONDS	TOTAL
Operating	\$37,831,334	\$77,341,854	\$7,356,090		\$122,529,188
Capital		\$48,560,000			\$48,560,000
TOTAL	\$37,831,334	\$125,901,854	\$7,356,090		\$171,089,188
BONDS					
MACS				\$8,000,000	\$8,000,000
Animal Health Labs				\$1,074,000	\$1,074,000
TOTAL				\$9,074,000	\$9,074,000

LONG SERVICE AWARDS

MARYLAND DEPARTMENT OF AGRICULTURE HONORS EMPLOYEES FOR YEARS OF CONTINUED SERVICE

On October 21, 2021, the department honored 44 employees for their years of dedicated service to the department and to the State of Maryland during a virtual awards ceremony. Of the employees being honored, 16 have 20 or more years of experience; six have 30 or more years of service; and two have 40 years of experience. All together, these employees represent 645 years of public service and over 1.3 million hours worked.

The following is a list of department employees by their county of residence who were recognized with service awards.

Allegany

- Biff Thompson, Forest Pest Management, 30 years

Anne Arundel

- Brenda Alexander, Central Services, 35 years
- Barbara Smallman, Turf & Seed, 30 years
- Cindy White-Hicks, State Chemist, 30 years
- Donna Birdsong, Turf & Seed, 25 years
- Lynn McNally, Central Services, 25 years
- Philip Davidson, State Chemist, 20 years
- Amy Eichelman, State Chemist, 20 years
- Tonya Kendrick, Maryland State Board of Veterinary Medical Examiners, 20 years
- Stephen Hurst, Turf & Seed, 15 years
- Jessica Koontz, Pesticide Regulation, 15 years
- Vanessa Orlando, Maryland State Board of Veterinary Medical Examiners, 15 years
- Genesis Parker, Turf & Seed, 15 years
- April Salisbury, Maryland Agricultural Water Quality Cost-Share (MACS) program, 15 years
- Willie Taylor, Central Services, 10 years
- Matthew Malinowski, State Chemist, 5 years
- Carolyn Shepke, Pesticide Regulation, 5 years
- Cassandra Shirk, Executive Direction, 5 years
- Baltimore City

- Susan Payne, Resource Conservation, 15 years

- Chana Turner, Maryland Agricultural Land Preservation Foundation (MALPF), 10 years

Baltimore County

- Rowland Agbede, Resource Conservation, 30 years
- Karen Wick, State Chemist, 30 years
- Venus Torbit, State Chemist, 15 years
- Amanda Massoni, Maryland Agricultural Land Preservation Foundation (MALPF), 5 years
- Weida Stoecker, Marketing, 5 years

Calvert

- Greta Jones, Mosquito Control, 5 years

Carroll

- Jason Watt, Resource Conservation, 20 years
- Jaime Tsambikos, Plant Protection & Weed Management, 5 years
- Amy Vargas, Animal Health, 5 years

Caroline

- Deborah Minnich, Resource Conservation, 25 years
- Jeffrey Dean, Resource Conservation, 5 years

Dorchester

- Charles Coleman, Weights & Measures, 35 years
- Richard Colburn, Executive Direction, 5 years

Frederick

- Kenneth Favorite, Nutrient Management, 30 years
- Holly Boyer, Resource Conservation, 15 years

Garrett

- Christopher Herbert, Resource Conservation, 20 years
- Roger Kitzmiller, Resource Conservation, 20 years

Harford

- Christopher Prigge, Resource Conservation, 15 years

Howard

- John Nickerson, Fiscal Services, 25 years
- Wendy Lloyd, Resource Conservation, 15 years

Kent

- Robert Hofstetter, Pesticide Regulation, 20 years
- Robert Myers, Resource Conservation, 20 years

Montgomery

- Assefa Fitta, State Chemist, 10 years
- Zacharias Tripoulas, Weights & Measures, 10 years
- Kevin Conroy, Executive Direction, 5 years
- Jason Schellhardt, Executive Direction, 5 years

Prince George's

- Pegeen Morgan, Maryland State Board of Veterinary Medical Examiners, 40 years
- Gaye Williams, Plant Protection & Weed Management, 40 years
- Daniel Davis, Food Quality Assurance, 5 years
- Elizabeth Hoffman, Resource Conservation, 5 years
- Karen Kirksey, Marketing, 5 years
- Hannah Peete, Pesticide Regulation, 5 years

Queen Anne's

- Hans Schmidt, Executive Direction, 5 years

Somerset

- Mark Carey, Resource Conservation, 15 years

St. Mary's

- John Heard, Mosquito Control, 50 years
- Parran Russell, Resource Conservation, 20 years

- Steven Bell, Plant Protection & Weed Management, 10 years

Talbot

- Kimberly Rice, Plant Protection & Weed Management, 20 years

Washington

- Lane Heimer, Plant Protection & Weed Management, 35 years

Wicomico

- Richard Glasgow, Resource Conservation, 35 years
- Thomas Phillips, Resource Conservation, 20 years
- Dawn Bradley, Maryland Agricultural Water Quality Cost-Share (MACS) program, 20 years
- John Hughes, Resource Conservation, 15 years

Worcester

- Alicia Walsh, Mosquito Control, 5 years

Other

- Jay Duell, Resource Conservation, 35 years, Pennsylvania
- Deborah Hayes, Plant Protection & Weed Management, 35 years, Delaware
- Laura Iacona, Food Quality Assurance, 20 years, Delaware
- Bryce Miller, Food Quality Assurance, 20 years, Pennsylvania
- Tynetta Cannon, Mosquito Control, 15 years, Delaware
- William Rawlings, Resource Conservation, 15 years, West Virginia
- Andrew Thomas, Resource Conservation, 15 years, Pennsylvania



CHANGING
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FOR THE BETTER

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Maryland
Department of Agriculture