Accomplishment Report – Emerald Ash Borer

State Maryland Year 2011

Is this a quarterly, semi annual or final report? **Annual**

List dates covered by this report: January - December

Cooperator: Maryland Department of Agriculture

Cooperators Project Coordinator:

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A. Compare actual accomplishments to objectives established for the period as indicated in the work plan. When the output of the project can be quantified, a computation of cost per unit of output is required when useful.*****

. The objectives of this work plan include continued execution of inventory and delimiting surveys, education and outreach, and management of EAB in MD.

During 2011 the following was accomplished:

- Inventory and delimiting surveys ongoing
- Interviewed and hired contractual labor force
- Traps set out, monitored, and removed
- Assisted Methods Development with a trap trial
- Biological control releases of three available parasitoids made
- Provided material to collect larvae or rear adults
- Assisted in collecting biocontrol emergence field data
- Extracted larvae for the biocontrol effort
- Maintained rearing room at the Cheltenham facility to collect emerged adults
- Set up a greenhouse at the Cheltenham facility to raise Fraxinus uhdei (tropical ash) for assistance in the biocontrol effort.
- Homeowner visits to inspect reported EAB infested trees
- Participated in periodic conference calls
- All data has been submitted to the national program for inclusion in the EAB database and IPHIS
- Four new counties (Anne Arundel, Howard, Washington & Allegany) found positive for emerald ash borer
- A new quarantine was issued the includes all counties west of the Chesapeake Bay
- MDA Website updated and outreach activities conducted targeting industry and practitioners
- Collected ash tree increment core samples for dating infestations.

B. If appropriate, explain why objectives were not met.*****

All objectives were met for the Maryland Emerald Ash Borer Project.

C. Where appropriate, explain any cost overruns.*****
There were no cost overruns.

If the program is survey in nature add the following information:

A. Survey Methodology
- Inventory/delimit ash using a 1/16 mile grid (2.5 acres, 330'x330') around new detections
- The remaining 1 ½ -2" dbh green ash trees of the 500 pairs (1,000 total) planted in 2009 as trap trees in and around the ash free zone to attract any EAB that might remain in the area were removed and debarked, looking for any signs of emerald ash borer.
- Selectively treat or cut natural and landscape ash trees in the project area, but outside of the ash free zone,
- Participate in the USDA EAB Targeted Trapping Survey.
- Participate in the biocontrol release and monitoring activities.
- Document, monitor and release biological control agents.
- Visited homeowners to inspect reported EAB infested trees.

B. Rationale underlying survey methodology
Survey guidelines followed as directed and/or approved by National Program

C. Survey dates
January - December

D. Taxonomic services
Samples will be screened by Gaye Williams of the MDA PP& WM Section. First county occurrence of suspect positives will be expedited to James Zablotny, APHIS identifier. Crew chiefs will verify positive detections during the delimiting survey.

E. Benefits and results of survey
Participation in the USDA national survey provides support for national mitigation activities to reduce the impact and spread of EAB.

Detail of activities:

Inventory and Delimiting Survey

Sixty-eight trees were delimited in 2011 . During the inventory phase, 3,379 trees were identified and marked. In Prince George's County 1,726 trees were identified on 200 acres and 1653 trees identified on 83 acres in Charles County.

We examined 150 trees using the boom lift.

Trapping

Survey has been done and will continue in the immediate vicinity around outlier positive traps. Sources (mother tree(s)) of the beetles are major focus.

A trap trial was conducted at 10 sites (40 traps) to support PPQ Methods Development efforts around the known infested area using purple and green traps using the programmatic manuka oil plus (Z)-3-hexenal lure. Each site had four traps that were serviced biweekly throughout the trapping season. Each site had 1 "old" purple (programmatic prism trap), 1 "new" purple, 1 green trap and 1 green Lindgren funnel trap at each site.

There were 2,610 prism traps operational statewide deployed in either the national grid, high risk, or the trap trial. There were 11 sites that had 'double decker' traps. These were set at high profile locations, such as campgrounds, that didn't have ash trees readily available or a high profile was desired. The campgrounds were provided with outreach material to provide to

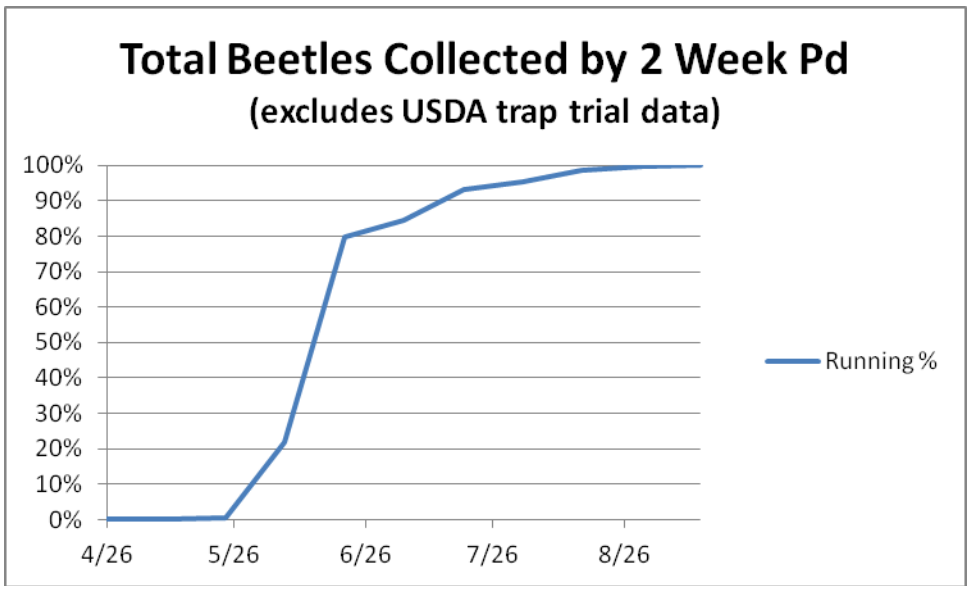
interested campers. All traps were serviced on a biweekly schedule. Four new counties (Allegany, Anne Arundel, Howard and Washington) were detected during the trapping survey. Gaye Williams examined 883 submitted samples from the prism traps identifying 1,920 EAB.

2011 Number of Traps by Type

County	Purple	Green Funnel	Green	New Purple	Double Decker Purple
AA	127	0	0	0	0
AL	79	0	0	0	0
BA	182	0	0	0	0
BC	23	0	0	0	0
CE	86	0	0	0	0
CH	258	0	0	0	0
CL	86	0	0	0	0
CR	86	0	0	0	0
CV	100	0	0	0	0
DR	85	0	0	0	0
FR	78	0	0	0	2
GR	86	0	0	0	1
HF	158	0	0	0	0
HW	91	0	0	0	0
KT	86	0	0	0	0
MG	104	0	0	0	0
PG	319	10	11	11	2
QA	85	0	0	0	1
SM	55	0	0	0	0
SO	33	0	0	0	3
TA	86	0	0	0	0
WA	80	0	0	0	0
WI	98	0	0	0	0
WO	96	0	0	0	2
Total	2567	10	11	11	11

MD EAB Trapping and other Survey Methods Summary

	2010		2011	
Total # traps	2601		2610	
# counties surveyed + BCity	22		24	
# sample records	16,046	**18,674**	16,263	**18,873***
# samples submitted	825		883	(*includes setup)
# positive samples	73		672	
# beetles trapped	237		1920	
# positive traps	33		162	
# positive traps PG Co	31		105	
# positive traps CH Co	2		44	
# new counties	0		4	AL, AA, HW, WA
Earliest date of emergence	5/1/2010		5/10/2011	
Earliest date of capture	5/19/2010		5/12/2011	
Latest date of capture	7/22/2010		9/1/2011	
Peak capture (PG & CH Co.'s)	6/4/2010		6/21/2011	
Length of capture period	~10 weeks		~16 weeks	
# Purple traps	2507		2567	
# Green traps	89		11	
# double decker traps P/P	2		11	
# double decker traps G/P	3		0	
Survey period - start (lure)	4/27 - 5/27	4/6 - 7/15	4/4 - 7/11	Avg 4/19
Survey period - end	8/17 - 9/21	5/11 - 10/8	8/1-9/9	Avg 8/14
Planted trap trees untreated	16	still in field 12/10	0	As of 10/6/11
Planted trap trees treated Saf	305	still in field 12/10	28	As of 10/6/11
Planted trap trees treated Tre	336	still in field 12/10	6	As of 10/6/11
Natural girdled trap trees set	86	Fall 2010	171	Fall 2011
Natural girdled trap trees	27	sampled fall '10	12	sampled fall '11
Natural girdled trap trees	4	positive	1	positive
Destructive sampling # trees	404	sampled	103	sampled
Destructive sampling # trees	17	positive	6	positive
# grids inventoried	687	PG 664 grids CH 23	352	
# trees ID'd	6432	PG 6220 trees CH 212	8968	
# grids resurveyed	113	25 trees id'd	0	



Biocontrol

Sampled 2011 biocontrol release site for overwintering survival – all three species successfully overwintered.

Set up a rearing room with emergence barrels and collected material each work day.

Collected 2,935 adults (2,391 hatched from rearing barrels, approximately 544 for caught in the wild) for biocontrol program propagation activities. Two thousand seven hundred sixty-nine adults were sent to the USDA ARS biocontrol lab in Newark, DE the other 166 adults were used by the UMD field study and other MDA field studies.

Recovery of other endemic parasitoids includes *Atanycolis sp*, *Spathius floridanus*, and *Balcha indica*. Parasitism by these agents is low but persistent throughout the sampling area.

A walk-in cooler continues to be filled with infested ash material for later larval extraction or adult emergence.

Twelve biocontrol release sites have been established, four in Allegany county, one in Anne Arundel county, one in Howard county and six in Prince George's county. A total of 54, 295 parasitoids were released at the 12 biocontrol sites. Nine sites received all three parasitoids, one site in Allegany county only received Oobius and two sites in Allegany county only received Spathius and Tetrastichus.

2011 Parasitoid Releases

County	Sites per county	*Oobius*	*Spathius*	*Tetrastichus*
Anne Arundel	1	185	2,911	4,669
Allegany	4	374	3,355	4,594
Howard	1	175	1,239	1,382
Prince George's	6	2,889	12,181	23,324
Total	12	3,623	19,686	33,969

Total parasitoids released: **57,278**

Greenhouse Production

The greenhouse in Cheltenham received tropical ash (*Fraxinus uhdei*) for leaf production in the continued biological control program with USDA. There are sixty *F. uhdei* in the Cheltenham greenhouse, 59 of these trees came from ARS lab in Newark, DE and one was from the MD Dept of Agriculture greenhouse in Annapolis, MD. In addition the MDA Annapolis greenhouse has produced 882 *F. uhdei* from seed and cuttings. As trees mature and leaves become abundant, they will be sent to the EAB Brighton, MI lab to help with the bio-control program.

Chemical Control

Twenty-two trees were treated in 2011. Ten planted trap trees were treated, 6 were treated with Safari, 4 were treated with Tree-Age. The additional 12 trees were treated with in the highly infested area in Prince George's county.

Tree Core Sampling

In November MDA worked with James Buck, Program Analyst, EAB Program, Brighton MI, to take ash tree core samples to help in determining the approximate date of earliest emerald ash borer infestation at different sites in Maryland. A total of 119 samples were taken at six sites in 3 counties (2-Prince George's, 2-Allegany, 2-Howard). All core samples were sent to Brighton, MI for analysis. Initial results show the earliest infestation was dated 2005 in Prince George's county and the most recent infestation occurring in 2009 in Howard county.

Personnel

Hired (or wrote new contracts for) 6 Ag Inspectors and 6 Field Technicians. Two Forest Pest Management staff also assisted in trapping in Baltimore City, Baltimore and Harford Counties.

Outreach

USDA-APHIS – EAB Promise Campaign

Spring Radio PSA

MD	9 stations	900 airings	20,000 impressions

Spring TV PSA

MD	5 stations	321 airings	15,967,500 impressions

Maryland Department of Agriculture Outreach activities

There were at least nine newspaper, two radio, and two TV interviews of MDA staff in 2011. MDA adapted the 'The Emerald Ash Borer Fun Activity Book' from Purdue University and printed 20,000 copies, 10,000 of which were provided to DNR Park Service for distribution. MDA participated in EAB Week with press releases, PSAs and featured articles in the MDA e-newsletter *MDA News* and distribution of approximately 1,000 packets of EAB "SillyBandz". Program ads, t-shirt tosses, exhibits, outfield banners, and screen ads with loudspeaker announcements were ongoing through the summer months at the Bowie Baysox and Southern Maryland Blue Crabs minor league baseball games. MDA also developed six traveling (pull up-easy to handle) exhibits to share with our partners at Maryland Cooperative Extension, MDA,

Master Gardeners/Home and Garden Information Center, and the Maryland Department of Natural Resources. Bus wraps ran in Charles County from 2/24-2011 through 2/25/2012.

Presentations were given at:

Invasive Species First Detector Training Agricultural Experiment Station, Rutgers, NJ	January 28, 2011
Western Maryland Forest Pest Update MD Dept Agriculture, Forest Pest Management Section, Oakland, MD	February 23,2011
Eastern Branch ESA – IDEP Symposium Eastern Branch, Entomological Society Association, Harrisburg, PA	March 20, 2011
EAB in MD – Detection, Delimitation & Bio-Control USDA, ARS Beneficial Insects Introduction Research Unit Seminar, Newark, DE	March 30, 2011
Field Tech Update MD Dept Agriculture, Survey Field Technician Update, Cheltenham, MD	April 5, 2011
EAB in MD – Detection, Delimitation & Bio-Control Delaware Arborist & Tree Care Seminar, Dover, DE	April 14, 2011
16th Annual Procrastinator's Pest Management Conf. Univ of MD, Cooperative Ext., Agricultural History Farm Park, Derwood, MD	June 10, 2011
Ocean City Ag Agents Meeting Univ. of MD, Cooperative Ext, The Dunes, Ocean City, MD	June 23, 2011
2011 *Fraxinus uhdei* Production MD Dept of Agriculture, Cheltenham, MD	July 12, 2011
MD Emerald Ash Borer Biocontrol Update MD Dept of Natural Resources, Annapolis, MD	November 14,2011
Foreign Agricultural Service JPAC Tour MD Dept of Agriculture, Cheltenham, MD	December 15, 2011

The staff responded to 122 homeowner calls to inspect potentially EAB infested trees.

F. NAPIS database submissions: Program pest and date of submission NOTE: All data are submitted to the national program for inclusion in IPHIS.

*indicates information required per 7 CFR 3016.40 and 7 CFR 3019.51

Approved and signed by

_____ Date: _____

Cooperator

_____ Date: _____

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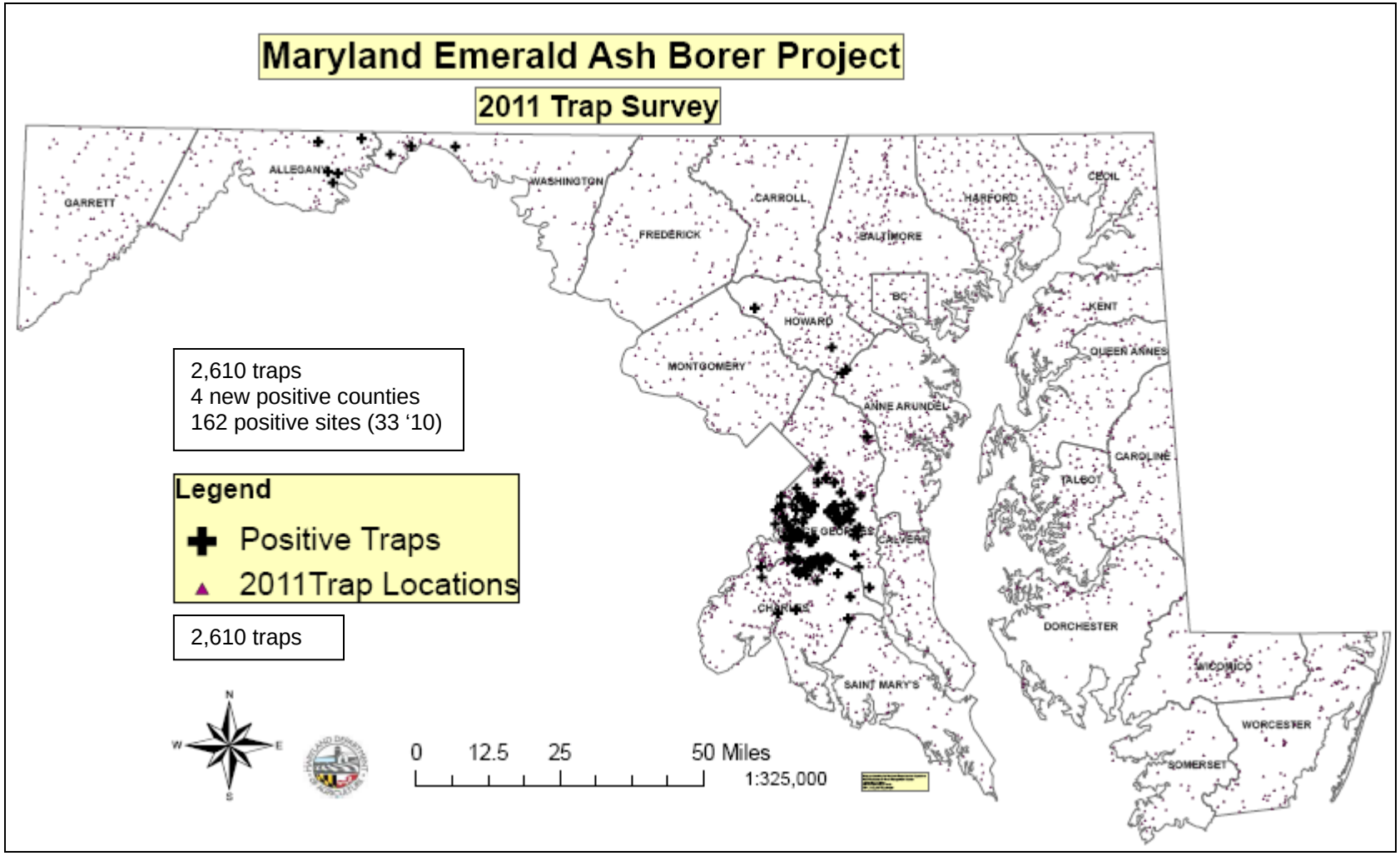
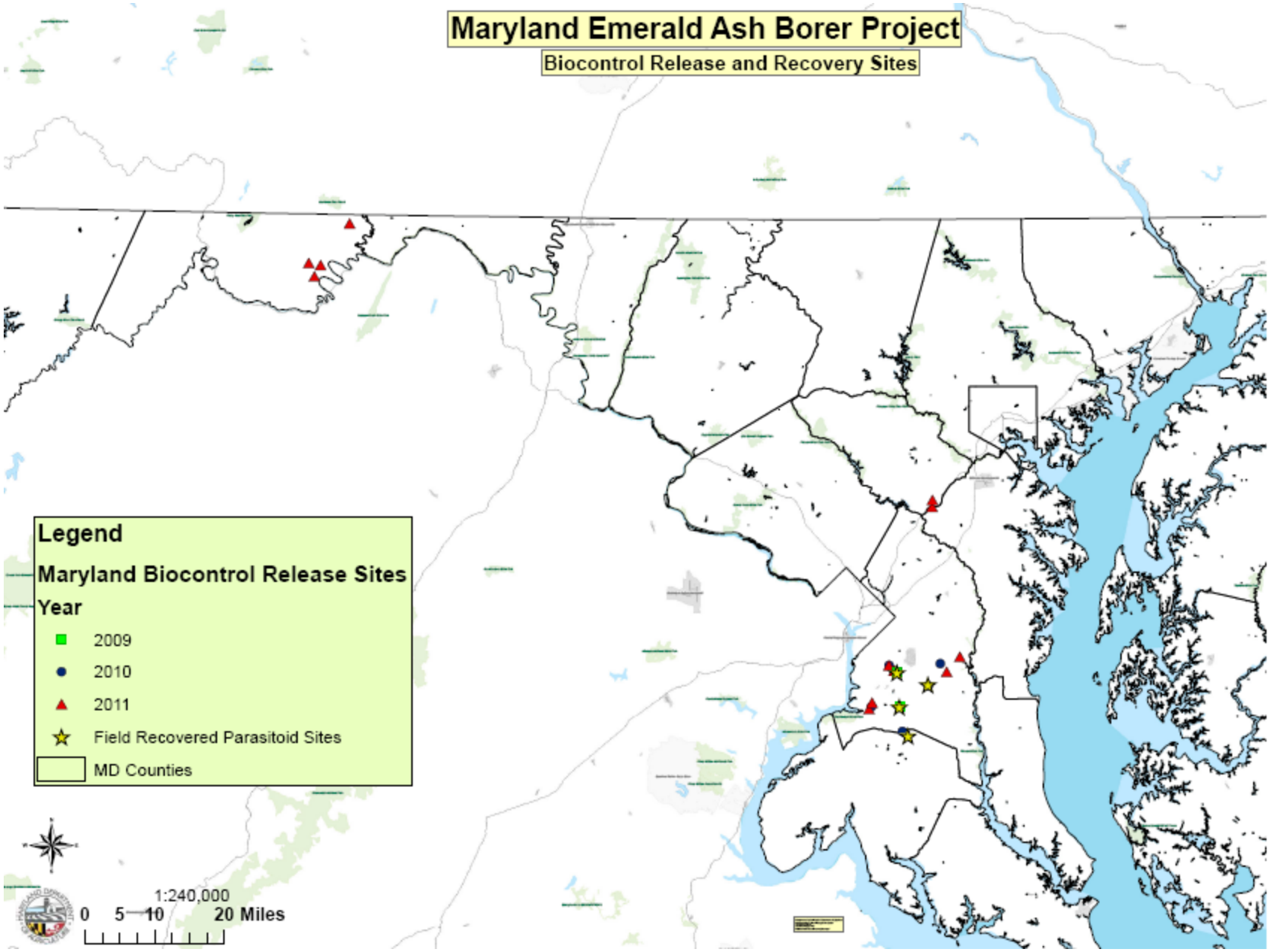
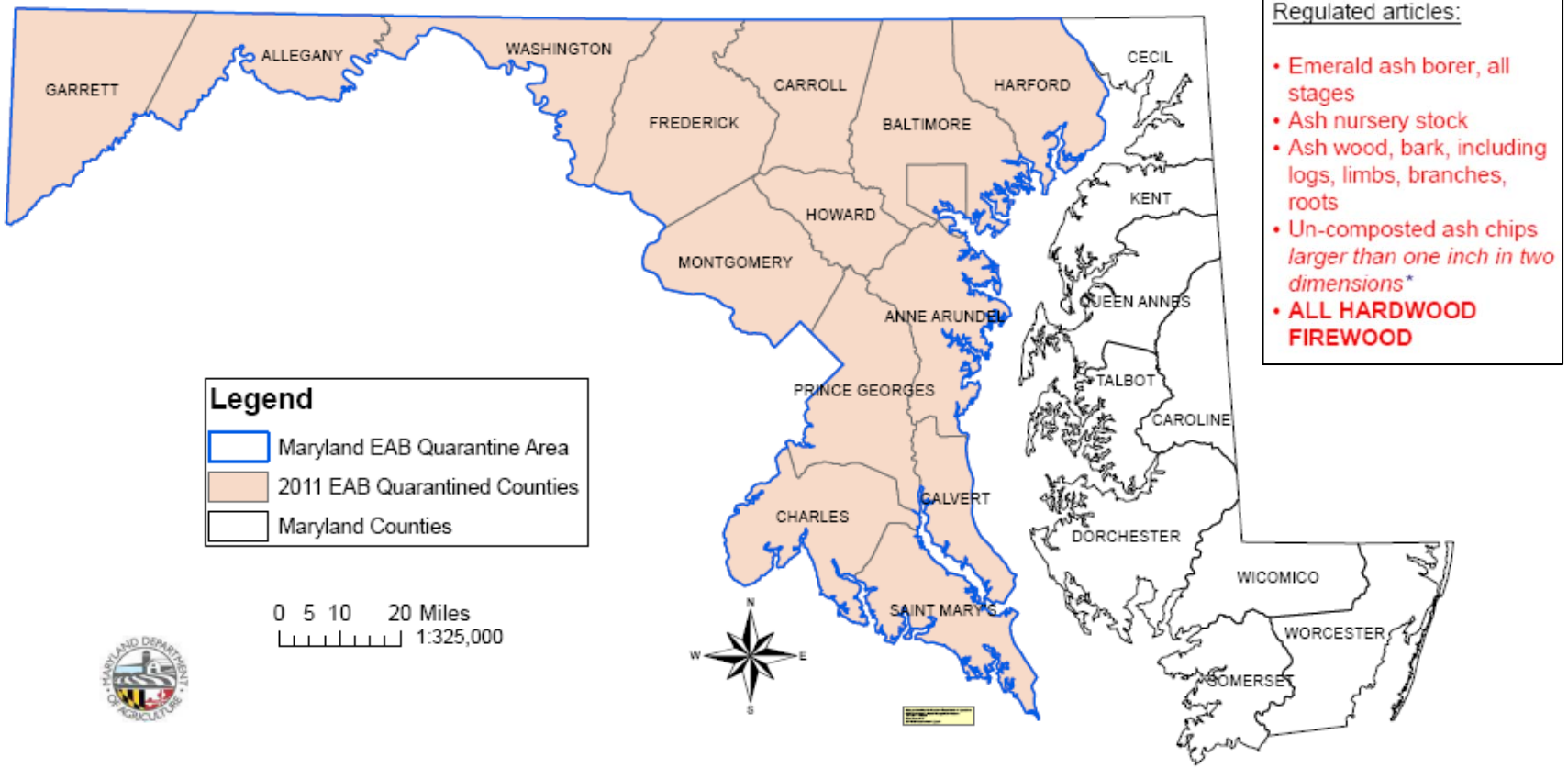

Maryland Emerald Ash Borer Project
2011 Trap Survey
GARRETT
ALLEGANY
WASHINGTON
FREDERICK
CARROLL
HARFORD
CECIL
BALTIMORE
BC
HOWARD
KENT
QUEEN ANNES
MONTGOMERY
ANNE ARUNDEL
CAROLINE
TALBOT
CALVERT
CHARLES
DORCHESTER
WICOMICO
SAINT MARY'S
WORCESTER
SOMERSET
2,610 traps
4 new positive counties
162 positive sites (33 '10)
Legend
Positive Traps
2011Trap Locations
2,610 traps
N
W
E
S
0
12.5
25
50 Miles
1:325,000


Maryland Emerald Ash Borer Project
Biocontrol Release and Recovery Sites
Legend
Maryland Biocontrol Release Sites
Year
2009
2010
2011
Field Recovered Parasitoid Sites
MD Counties
1:240,000
0 5 10 20 Miles

Maryland Department of Agriculture
Emerald Ash Borer Quarantine Order #11-2



Regulated articles:

- Emerald ash borer, all stages
- Ash nursery stock
- Ash wood, bark, including logs, limbs, branches, roots
- Un-composted ash chips *larger than one inch in two dimensions**
- **ALL HARDWOOD FIREWOOD**