

# Indiana Cooperative Agricultural Pest Survey

## 2020 Annual Report for Survey

1 January – 31 December



Department of Entomology at Purdue University  
Indiana Department of Natural Resources (IDNR)  
United State Department of Agriculture (USDA), Animal and Plant Health Inspection Service  
(APHIS), Plant Protection and Quarantine (PPQ)

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19 February 2021

## Pest Detection / CAPS Survey Accomplishment Report – FY2020

<b>Year:</b>	2020
<b>State:</b>	Indiana
<b>Cooperative Agreement Name:</b>	Indiana Agricultural Pest Surveys (CAPS) 2020
<b>Cooperative Agreement Number:</b>	20-8218-0332-CA
<b>Project Funding Period:</b>	1 January 2020 – 31 December 2020
<b>Project Report:</b>	<b>PD / CAPS Survey Report</b>
<b>Project Document Date:</b>	31 March 2021
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Quarterly Report	<input type="checkbox"/>
Semi-Annual Accomplishment Report	<input type="checkbox"/>
Annual Accomplishment Report	<input checked="" type="checkbox"/>

# Pest Detection / CAPS Survey Accomplishment Report – FY2020

## A. Narrative

Indiana Cooperative Agricultural Pest Surveys in 2020 were Field Crops Commodities (Corn and Soybean), Nursery and Retail Plants, and Exotic Wood Borer/Bark Beetle. All aspects of the Field Crops Commodities survey for soybean were planned, executed and reported by the SSC. Only moth and invasive plant monitoring for the corn component of this survey were planned, executed and reported by the SSC. The disease monitoring portion of the corn survey was a CAPS collaboration with the Purdue Plant Pest Diagnostic Laboratory (PPDL) and the Indiana Crop Improvement Association (ICIA). Corn tissue samples were collected by ICIA, screened by PPDL, and results reported by the SSC. The Nursery and Retail Plants survey was a collaborative effort of CAPS, Indiana Department of Natural Resources (IDNR), and PPDL. IDNR assisted in setting and servicing traps and obtaining foliar samples. PPDL collaborated with the collection of foliar disease samples and screened them for disease. The SSC assisted in survey planning/logistics, processing samples and archiving/reporting results. The Exotic Wood Borer/Bark Beetle survey was a collaborative effort with PPQ and CAPS. Pathway analysis was used to identify high-risk trap sites. PPQ co-planned the survey and set and serviced traps. The SSC co-planned the survey, processed and archived samples, and reported results. Survey data from PPQ (knapweed beetle), US Forest Service (gypsy moth), and IDNR (PPA 7721-Special Crops) were coded and/or uploaded. Taxonomic services for suspect invasive species were provided by the SSC to IDNR and PPDL on 12 occasions.

Proposed total number of survey records was 5,499, and actual number of records was 6,892. Total proposed and actual survey funding was \$31,015. Cost per sample was \$4.50. Survey details follow.

### A.1. Field Crops Commodity Survey:

#### Accomplishments:

Proposed and actual funding was \$10,984.

Proposed data were 3,316 records. Actual data were 3,947 records.

Cost per record was \$2.78.

A.1.a. Proposed total moth data were 6 sites x 4 moth pests x 5 traps/pest/crop x 2 crop types (corn, soybean) x 12 weeks = 2880 records. Five moth species representing four moths per crop appear below. Proposed invasive plant records were 6 sites x 1 observation x 2 crops x 3 sample dates = 36. Proposed corn disease survey records were 100 sites x 4 pests X 1 visit=100 x 4 =400 records.

(Moths)		Records	
		<u>Proposed</u>	<u>Uploaded</u>
1. Cotton cutworm, <i>Spodoptera litura</i> ,	(corn)	360	387
2. Egyptian cottonworm, <i>Spodoptera littoralis</i>	(corn, soy)	720	780
2. Old world bollworm, <i>Helicoverpa armigera</i>	(corn, soy)	720	692
3. Silver Y-moth, <i>Autographa gamma</i>	(corn, soy)	720	780
4. Golden twin-spot moth, <i>Chrysodeixis chalcites</i>	(soy)	360	380

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(Plants)

5. Yellow witchweed, <i>Alectra vogelii</i>	(soy)	18	18
9. Asiatic witchweed, <i>Striga asiatica</i>	(corn)	18	18

(Corn Diseases)

6. Philippine downy mildew, <i>Peronosclerospora philippinensis</i>	100	223
7. Java downy mildew, <i>Peronosclerospora maydis</i>	100	223
8. Tar spot, <i>Phyllachora maydis</i>	100	223
9. <i>Xanthomonas vasicola</i> pv. <i>vasculorum</i>	100	223

A.1.b. Survey Methodology: Methods were adapted from the CAPS Corn and Soybean References 2020. Six statewide high-risk trap locations with high concentrations of grain crops (soybean and field corn) were chosen for this survey. Trap numbers and types placed at each location included: five bucket traps (green/yellow/white) with lure and kill strips for each of old world bollworm, *Helicoverpa armigera*, Egyptian cottonworm, *Spodoptera littoralis*, cotton cutworm, *Spodoptera litura*, silver Y-moth *Autographa gamma*, and golden twin-spot moth, *Chrysodeixis chalcites*. Traps were set on 19-22 May and were serviced weekly through the end of the reporting period 17-20 August. Yellow witchweed, *Alectra vogelii*, (soybean) and Asiatic witchweed, *Striga asiatica* (corn) surveys were 20-minute rapid, visual searches in an “M” shaped pattern across a field performed monthly from 15 June to 20 Aug. This survey method was based on the generally recommended search pattern for pest insects and weeds by the Purdue Cooperative Extension Service. Disease targets including Philippine downy mildew, *P. philippinensis*, Java downy mildew, *P. maydis*, bacterial leaf spot, *Xanthomonas vasicola* pv. *vasculorum*, and tar spot, *P. maydis* were sampled in 77 counties from 21 May through 13 November. One stover sample was submitted on 28 January 2020 that represented the previous season crop. All samples were screened by Purdue Plant and Pest Diagnostic Laboratory.

A.1.c. Survey locations, trap service and weed search dates;

Moth survey

1. Jennings Co. Southeast-Purdue Agricultural Center, Butlerville, IN.  
Trap dates; weekly from 5/22 to 8/20.
2. Knox Co. Southwest-Purdue, Vincennes, IN.  
Trap dates; weekly from 5/21 to 8/20.
3. La Porte Co. Pinney-Agricultural Center, Wanatah, IN.  
Trap dates; weekly from 5/19 to 8/19.
4. Randolph Co. Davis-Purdue Agricultural Center, Farmland, IN.  
Trap dates; weekly from 5/20 to 8/17.
5. Tippecanoe Co. Meigs-Purdue Horticultural Center, Lafayette, IN.  
Trap dates; weekly from 5/20 to 8/19
6. Whitley Co. Northeast-Purdue Agricultural Center, Columbia City, IN.  
Trap dates; weekly from 5/22 to 8/17.

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### Weed survey

7. Jennings Co. Southeast-Purdue Agricultural Center, Butlerville, IN.  
Weed search dates; 6/16, 7/13, 8/20
8. Knox Co. Southwest-Purdue, Vincennes, IN.  
Weed search dates; 6/18, 7/14, 8/20
9. La Porte Co. Pinney-Agricultural Center, Wanatah, IN.  
Weed search dates; 6/15, 7/17, 8/19
10. Randolph Co. Davis-Purdue Agricultural Center, Farmland, IN.  
Weed search dates; 6/16, 7/13, 8/17
11. Tippecanoe Co. Meigs-Purdue Horticultural Center, Lafayette, IN.  
Weed search dates; 6/15, 7/16, 8/19
12. Whitley Co. Northeast-Purdue Agricultural Center, Columbia City, IN.  
Weed search dates; 6/17, 7/14, 8/17

Exotic mildews, bacterial leaf streak, and corn tar spot survey locations, sample dates  
(number of sites for a sample date).

13. Allen Co. 9/8 (2)
14. Bartholomew Co. 10/12
15. Benton Co. 8/6
16. Boone Co. 8/4, 9/8 (2)
17. Brown Co. 10/12
18. Carroll Co. 7/28, 7/29 10/12
19. Cass Co. 6/10, 7/29
20. Clark co. 9/21
21. Clinton 8/17,9/10 (2), 10/5
22. Crawford Co. 11/21
23. Daviess Co. 7/24, 10/12
24. Dearborn Co. 7/21, 10/12
25. Decatur Co. 10/12
26. Dubois Co. 7/21, 9/24
27. Elkhart Co. 9/22 (4), 10/12
28. Floyd Co. 9/21 (2)
29. Fountain Co. 10/12
30. Franklin Co. 10/12
31. Fulton Co. 8/4
32. Gibson Co. 8/5, 8/21, 8/31
33. Greene Co. 10/12
34. Hamilton Co. 9/2, 9/21
35. Harrison Co. 9/21, 11/13
36. Hendricks Co. 10/12
37. Howard Co. 8/17 (2), 8/20, 10/1 (2)
38. Huntington Co. 10/12
39. Jackson Co. 9/17, 10/12
40. Jasper Co. 6/2, 6/15, 7/24, 8/17, 9/22 (6), 10/15

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41. Jefferson Co. 10/12
42. Jennings Co. 7/31
43. Johnson Co. 8/5, 8/6, 10/12
44. Knox Co. 5/29 (2), 6/3 (2), 8/7, 8/25
45. Kosciusko Co. 9/22 (3)
46. La Porte Co. 6/23, 7/7 (2), 8/4, 8/27 (4), 9/22 (8)
47. Lagrange Co. 5/29, 6/15, 8/27, 9/22 (2)
48. Lawrence Co. 8/4
49. Madison Co. 9/17
50. Marion Co. 10/12
51. Marshall Co. 7/24, 8/6, 9/15, 9/8 (8)
52. Martin Co. 10/12
53. Miami Co. 7/1, 8/17
54. Monroe Co. 10/12
55. Montgomery Co. 6/16 (2), 7/28, 8/20, 9/2 (5)
56. Morgan Co. 10/12
57. Newton Co. 10/12
58. Noble Co. 9/22 (2)
59. Ohio Co. 10/12
60. Owen Co. 8/18
61. Parke Co. 8/31, 9/3
62. Perry Co. 8/7 (2)
63. Porter Co. 8/17, 9/22
64. Posey Co. 5/21 (3)
65. Pulaski Co. 6/26, 8/4, 9/22
66. Putnam Co. 7/16
67. Randolph Co. 7/23
68. Ripley Co. 10/12
69. Rush Co. 7/21, 10/12
70. Shelby Co. 6/30, 10/2
71. Spencer Co. 8/11, 9/10
72. St. Joseph Co. 7/16, 7/29, 8/11, 8/14, 8/27 (3)
73. Starke Co. 9/22 (2), 10/12
74. Steuben Co. 9/22 (2)
75. Sullivan Co. 8/18, 8/25
76. Switzerland Co. 10/12
77. Tippecanoe Co. 1/28, 7/30, 8/6, 8/7, 8/18, 8/21, 8/27, 9/2, 9/3, 9/8 (13), 10/12
78. Tipton Co. 8/19, 8/21 (2), 9/2 (2)
79. Union Co. 10/12
80. Vanderburgh Co. 8/18, 10/13
81. Vermillion Co. 6/10
82. Vigo Co. 10/12
83. Wabash Co. 7/1, 7/22
84. Warren Co. 8/7, 8/27, 8/31 (2), 9/2 (4), 10/12
85. Warrick Co. 9/24
86. Washington Co. 9/21

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- 87. Wayne Co. 9/21
- 88. White Co. 9/4, 9/8, 9/22 (4), 10/12
- 89. Whitley Co. 7/30

### A.1.d. Benefits and Results of Survey:

As in previous years, several endemic similar noctuid loopers were attracted to the *A. gamma* and *H. armigera* lures. This resulted in about 200 specimens that required screening by micro-dissection (*H. armigera*) and/or external morphology (*A. gamma*). No target species were identified. Fifty-one potential suspect *Helicoverpa* specimens were sent to the Identification Technology Program (ITP) Molecular Laboratory USDA-APHIS-PPQ-Science & Technology (S&T), Fort Collins, Colorado for molecular determination. These Indiana suspect specimens were captured within 90 miles of a positive capture in NE Illinois (OHare Airport, Chicago Ill. All NW Indiana specimens were negative for *H. armigera*.

Tar spot, *P. maydis*, was confirmed at 53 sites in 37 counties resulting in 11 new county records: Daviess, Dearborn, Dubois, Franklin, Johnson, Martin, Ripley, Spencer, Vanderburgh, Warrick, and Wayne. No other positive exotic corn disease targets were detected.

### A.1.e. Database submissions:

Cotton cutworm, *Spodoptera litura*  
Date Range: 05-19-2020 thru 8-20-2020  
Counties 6      Sites 5    Pos 0    Neg 387

Egyptian cottonworm, *Spodoptera littoralis*,  
Date Range: 05-19-2020 thru 8-20-2020  
Counties 6      Sites 5    Pos 0    Neg 780

Old world bollworm, *Helicoverpa armigera*,  
Date Range: 05-19-2020 thru 8-20-2020  
Counties 6      Sites 5    Pos 0    Neg 692

Silver Y-moth *Autographa gamma*;  
Date Range: 05-19-2020 thru 8-20-2020  
Counties 6      Sites 5    Pos 0    Neg 780

Golden twin spot Moth, *Chrysodiexis chalcites*,  
Date Range: 05-19-2020 thru 8-20-2020  
Counties 6      Sites 5    Pos 0    Neg 380

Yellow witchweed, *Alectra vogelii*,  
Date Range: 06-15-2020 thru 8-20-2020  
Counties 6      Sites 6    Pos 0    Neg 18

Asiatic witchweed, *Striga asiatica*  
Date Range: 06-15-2020 thru 8-21-2020  
Counties 6      Sites 6    Pos 0    Neg 18

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Philippine downy mildew, *Peronosclerospora philippinensis*

Date Range: 5-21-2020 thru 11-13-2020

Counties 77 Sites 223 Pos 0 Neg 223

Java downy mildew, *Peronosclerospora maydis*

Date Range: 5-21-2020 thru 11-13-2020

Counties 77 Sites 223 Pos 0 Neg 223

Tar spot, *Phyllachora maydis*,

Date Range: 5-21-2020 thru 11-13-2020

Counties 77 Sites 223 Pos 53 Neg 170

Bacterial leaf streak, *Xanthomonas vasicola*, pv. *vasculorum*

Date Range: 5-21-2020 thru 11-13-2020

Counties 77 Sites 223 Pos 0 Neg 223

### A.2. Nursery and Retail Plants Survey.

A.2.a. Proposed old world bollworm, *Helicoverpa armigera*, observations were 270 records. Proposed total boxwood blight, *Calonectria pseudonaviculata*, observations were about 200 records. Proposed collections for sudden oak death (SOD), *Phytophthora ramorum*, were 200 records.

#### Accomplishments:

Proposed and actual funding was \$16,915.

Proposed data were 670 records. Actual data were 738 records.

Cost per record was \$22.92.

	Records	
	<u>Proposed</u>	<u>Uploaded</u>
1. Old world bollworm, <i>Helicoverpa armigera</i>	270	353
2. boxwood blight, <i>Calonectria pseudonaviculata</i>	200	183
3. sudden oak death, <i>Phytophthora ramorum</i>	200	202
Totals	670	738

A.2.b. Survey Methodology: This survey was integrated with the annual plant nursery and retail outlet inspections conducted by Indiana Department of Natural Resources. Subsets of sites for various pests were sampled from about 360 sites visited annually. State nursery inspectors set and monitored traps for old world bollworm, *H. armigera*, at 46 locations in 17 counties; observed and sampled foliage of ornamental boxwood cultivars *Buxus* spp. for boxwood blight, *C. pseudonaviculata*; at 58 sites in 34 counties; and observed and sampled a wide range of susceptible perennial plant foliage for SOD, *P. ramorum* symptoms at 27



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sites in 17 counties. Moth samples were sent to the SSC and foliar samples were sent to Purdue University Plant Pest & Disease Laboratory.

For the moth survey, one plastic bucket trap with old world bollworm lure and kill strip was placed at each site. Sample interval was approximately biweekly. Sampling for boxwood blight, *C. pseudonaviculata*, was visual at plant nurseries, retail outlets, and landscapes with suspect boxwood leaf tissue submitted for microscopic confirmation at Purdue Plant Pest Diagnostic Laboratory (PPDL). Random and directed visual observations of potential host plants suspected of sudden oak death, *P. ramorum* lesions were tested at PPDL using an enzyme-linked immunosorbent assay (ELISA) consistent with the USDA-APHIS Phytophthora ramorum protocols. Confirmation testing (PCR) was performed by an APHIS-approved lab at Michigan State University, East Lansing, MI.

The relatively high cost of the Nursery and Retail Plants survey was due to laboratory supplies and labor required for screening and confirmation.

### A.2.c. Old world bollworm survey locations; trap service dates;

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 01. Allen 6/12 – 9/18; 5 sites    | 09. Johnson 5/22– 8/14; 2 sites     |
| 02. Boone 6/08 – 8/17; 1 site     | 10. La Porte 5/19 – 9/1; 1 site     |
| 03. Clark 5/18 – 9/15; 2 sites    | 11. Madison 5/19 – 8/24; 1 site     |
| 04. Delaware 5/19 – 8/27; 1 site  | 12. Marion 5/22 – 8/14; 3 sites     |
| 05. Dubois 06/12 - 9/17; 2 sites  | 13. Marshall 6/4 – 9/14; 5 sites    |
| 06. Floyd 5/18 – 9/15; 2 sites    | 14. Porter 5/19 – 9/1; 4 sites      |
| 07. Hamilton 5/18 – 9/15; 3 sites | 15. Tippecanoe 6/8 – 9/14; 5 sites  |
| 08. Harrison 6/25 – 8/14; 1 site  | 18. Vanderburgh 6/8 – 9/16; 3 sites |
|                                   | 19. Vigo 5/15 – 8/7; 5 sites        |

### Continued. Boxwood blight locations and dates.

- |                                      |  |
|--------------------------------------|--|
| 01. Adams Co. 7/20; 1 site           | 18. Knox Co. 9/01; 1 site              |
| 02. Allen Co. 7/22; 1 site           | 19. LaPorte Co. 6/10; 1 site           |
| 03. Bartholomew Co. 5/7; 1 site      | 20. Lawrence Co. 6/3; 1 site           |
| 04. Brown Co. 6/15; 1 site           | 21. Madison Co. 8/18; 1 site           |
| 05. Cass Co. 6/7; 3 1 site           | 22. Marion Co. 5/13, 5/15; 3 sites     |
| 06. Clark Co. 4/28; 2 sites          | 23. Monroe Co. 5/1 to 6/22; 4 sites    |
| 07. Daviess Co. 7/29; 1 site         | 24. Montgomery Co. 9/3, 1 site         |
| 08. DeKalb Co. 6/23; 1 site          | 25. Porter Co. 7/31, 9/14; 2 sites     |
| 09. Delaware Co. 8/26, 8/27; 3 sites | 26. Randolph Co. 7/20; 1 site          |
| 10. Dubois Co. 5/21 to 9/17; 5 sites | 27. St Joseph Co. 6/25; 1 site         |
| 11. Elkhart Co. 7/1, 7/13; 2 sites   | 28. Scott Co. 4/28; 1 site             |
| 12. Floyd Co. 5/28; 1 site           | 29. Vanderburg Co. 7/15, 8/16; 2 sites |
| 13. Hamilton Co. 7/21, 8/27; 3 sites | 30. Vigo Co. 5/15 to 6/11; 3 sites     |
| 14. Harrison 5/6; 1 site             | 31. Wabash Co. 6/15, 6/16; 2 sites     |
| 15. Howard Co. 8/5; 1 site           | 32. Warrick Co. 8/19; 1 site           |
| 16. Jackson Co. 4/20, 5/28; 2 sites  | 33. Washington Co. 5/7, 5/28; 2 sites  |
| 17. Jefferson Co. 4/28; 1 site       | 34. Wayne Co. 7/16, 7/29; 2 sites      |

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### Sudden Oak Death survey locations and dates

- |                                   |  |
|-----------------------------------|--|
| 01. Allen Co. 6/8; 1 site         | 10. Madison Co. 8/18; 1 site             |
| 02. Boone Co. 6/16; 2 sites       | 11. Marion Co. 5/13, 5/18, 6/10; 3 sites |
| 03. Clark Co. 5/28; 3 sites       | 12. Marshall Co. 7/24; 1 site            |
| 04. Dubois Co. 6/29; 1 site       | 13. Monroe Co. 5/26, 6/18; 4 sites       |
| 05. Elkhart Co. 7/1; 1 site       | 14. Owen Co. 5/26; 1 site                |
| 06. Floyd Co. 5/29; 1 site        | 15. St. Joseph Co. 6/9, 6/19; 2 sites    |
| 07. Hamilton Co. 7/21; 1 site     | 16. Tippecanoe Co. 6/23, 6/25; 2 sites   |
| 08. Knox Co. 9/1; 1 site          | 17. Washington Co. 5/28; 1 site          |
| 09. LaPorte Co. 6/8, 6/12; 1 site |  |

A.3.d. Benefits and Results of Survey. No Old World bollworm, boxwood blight, or sudden oak death were detected in this survey.

#### A.3.e. Database submissions:

Old world bollworm, *Helicoverpa armigera*,  
Date Range: 05-18-2020 thru 9-18-2020  
Counties 16 Sites 46 Pos 0 Neg 307

Boxwood blight, *Calonectria pseudonaviculata*,  
Date Range: 04-28-2020 thru 9-17-2020  
Counties 27 Sites 51 Pos 0 Neg 186 (=317,962 stems)

Sudden oak death, *Phytophthora ramorum*  
Date Range: 05-13-2020 thru 9-1-2020  
Counties 44 Sites 89 Pos 0 Neg 350

### **A.3 Exotic Woodborers/Bark Beetles Survey**

A. 4.a. Proposed data collection for the risk-based, exotic woodborers/bark beetles survey were: Japanese pine sawyer beetle, *Monochamus alternatus*; large pine weevil (245 records), *Hylobius abietis*, black fir sawyer (245 records), *Monochamus urussovii*; sixtoothed bark beetle (245 records), *Ips sexdentatus*; European spruce bark beetle (245 records), *Ips typographus*; Mediterranean pine engraver (245 records); ; six-tooth spruce bark beetle *Pityogenes chalcographus* (35 records); oak ambrosia beetle, *Playpus quercivorus* (140 records); European hardwood ambrosia beetle, *Trypodendron domesticum* (60 records); oak processionary moth, *Thaumetopoea processionea* (35 records), and Asian longhorned beetle, *Anoplophora glabripennis* (18 records).

#### Accomplishments;

Proposed and actual funding was \$3,116  
Proposed data were 1,513 records. Actual data were 2,207 records.  
Actual cost per record was \$1.41.

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A.3.b. Survey Methodology: This survey is an APHIS-PPQ/IDNR/CAPS collaborative effort. PPQ and IDNR set and sampled traps and CAPS processed, identified, and archived samples. Exotic Woodborer/Bark Beetle Survey Reference, 2019, was followed. One hundred eleven Lindgren traps (12-funnel) were deployed at 55 Indiana sites representing 29 counties. Sites were chosen by recognition of apparent risk of receiving target pests through commerce, or by vulnerable habitat. One to three (varies by site) traps with wet cups containing dilute propylene glycol were placed at each site. Traps contained one of the following lures: Monochamol+alpha-pineneUHR+ethanol, Chalcogran, Lineatin, P. quercivorus, or IPS (tri-lure). Traps were serviced about every two weeks. Asian longhorned beetle survey consisted of a 30-minute random search in a mixed hardwood forest once monthly in June, July, and August at 6 state-wide locations. Oak processionary moth survey was one plastic wing trap at five railroad siding yards monitored every two weeks.

A.3.c. Survey location and dates: Lindgren traps were located at 58 Indiana sites in 29 counties. Traps were deployed 24 March to 9 June. Asian longhorned beetle visual surveys were located in Knox, LaPorte, Tippecanoe, Randolph, Jennings, Whitley Counties. Visual surveys occurred from 15 June to 20 August. Oak processionary moth (OPM) survey sites were Adams, Elkhart, Hendricks, Porter, and Vanderburg Counties. OPM monitoring occurred 6 July to October 10. Total sites at 65 and counties at 66. Searches were made between 6/24 and 8/21.

WB/EBB survey locations (counties) and date range.

### Lindgren traps for exotic bark beetles

- |  |  |
|--|--|
| 01. Bartholomew Co. 6/11 – 10/24; 1 site | 16. LaPorte Co. 4/8– 10/7; 4 sites     |
| 02. Boone Co. 6/30 -10/30; 2 sites       | 17. Madison Co. 6/25 – 11/17; 1 site   |
| 03. Clark Co. 4/10 – 9/22; 2 sites       | 18. Marion Co. 6/10 – 11/7; 5 sites    |
| 04. Crawford Co. 4/21 – 9/29; 1 site     | 19. Montgomery Co. 6/10 – 9/29; 1 site |
| 05. Daviess Co. 4/11 – 9/19; 1 site      | 20. Orange Co. 4/21 – 10/22; 1 site    |
| 06. Delaware Co. 6/25 – 11/20; 1 site    | 21. Owen Co. 7/23 – 11/16 1 site       |
| 07. Dubois Co. 4/16 -9/24; 1 site        | 22. Parke Co. 5/24 – 10/5; 1 site      |
| 08. Elkhart Co. 4/8 – 10/6; 2 sites      | 23. Pike Co. 4/23 – 19/21; 3 sites     |
| 09. Floyd Co. 4/21 – 9/29; 1 site        | 24. Porter Co. 7/7 – 10/8; 12 sites    |
| 10. Gibson Co. 4/11 – 9/25; 3 sites      | 25. Ripley Co. 4/15 – 9/23; 1 site)    |
| 11. Greene Co. 4/17 – 9/25/14; 1 site    | 26. Scott Co 4/10 - 9/22; 3 sites      |
| 12. Jackson Co. 4/10 – 9/22; 1 site      | 27. Shelby Co. 6/15 -11/12; 2 sites    |
| 13. Jefferson Co. 4/15 – 9/23 1 site     | 28. Starke Co. 4/8 – 10/8 2 sites      |
| 14. Johnson Co. 6/30 – 10/16; 1 site     | 29. Vanderburgh Co. 4/16 – 9/2; 1 site |
| 15. Lake Co. 4/7 – 10/7; 1 site          |  |

### ALB Visual search (3) of mixed hardwood forest.

- |  |  |
|--|--|
| 1. Jennings Co. 6/16, 7/13, 8/20; 1 site | 4. Randolph Co. 6/16, 7/13, 8/17; 1 site   |
| 2. Knox Co. 6/18, 7/14, to 8/20; 1 site  | 5. Tippecanoe Co. 6/15, 7/16, 8/19; 1 site |
| 3. LaPorte Co. 6/15, 7/17, 8/19; 1 site  | 6. Whitley Co. 6/17, 7/14, 8/17; 1 site    |

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### OPM Wing trap monitoring

1. Adams Co. 7/8 – 10/8; 1 site
2. Elkhart Co. 7/9 – 9/22; 1 site
3. Hendricks Co. 7/22 (1 sample); 1 site
4. Porter Co. 7/7 – 9/14; 1 site
5. Vanderburgh Co. 7/20 – 9/29; 1 site

A.4.d Benefits and results of survey: Total samples received and screened and visual records were 818. No target species were detected.

### A.4.e. Database submissions:

Asian longhorned beetle, *Anoplophora glabripennis*

Date Range: 6-15-2020 thru 8-20-2020

Counties 6 Sites 6 Pos 0 Neg 18

Japanese pine sawyer beetle, *Monochamus alternatus*

Date Range: 4-7-2020 thru 10-11-2020

Counties 21 Sites 33 Pos 0 Neg 355

Large pine weevil, *Hylobius abietis*

Date Range: 4-7-2020 thru 10-11-2020

Counties 21 Sites 33 Pos 0 Neg 355

Black fir sawyer, *Monochamus urussovii*

Date Range: 4-7-2020 thru 10-11-2020

Counties 21 Sites 33 Pos 0 Neg 355

Sixtoothed bark beetle, *Ips sexdentatus*

Date Range: 4-7-2020 thru 10-10-2020

Counties 21 Sites 34 Pos 0 Neg 355

European spruce bark beetle, *Ips typographus*

Date Range: 4-7-2020 thru 10-10-2020

Counties 21 Sites 34 Pos 0 Neg 355

Sixtoothed spruce bark beetle, *Pityogenes chalcographus*

Date Range: 4-7-2020 thru 10-8-2020

Counties 1 Sites 5 Pos 0 Neg 70

Oak ambrosia beetle, *Playpus quercivorus*

Date Range: 4-7-2020 thru 10-8-2020

Counties 17 Sites 19 Pos 0 Neg 210

European hardwood ambrosia beetle, *Trypodendron domesticum*

Date Range: 4-7-2020 thru 11-20-2020

Counties 17 Sites 19 Pos 0 Neg 110

## Pest Detection / CAPS Survey Accomplishment Report – FY2020

Oak processionary moth, *Thaumetopoea processionea*

Date Range: 7-7-2020 thru 9-29-2020

Counties 6    Sites 6    Pos 0    Neg 18

**B. If appropriate, explain why objectives were not met.** All objectives for reporting period 1 January 2020 to 31 December 2020 were met.

**C. Where appropriate, explain any cost overruns or unobligated funds in excess of \$1,000.** There were no cost overruns.

**D. Supporting Documents (if applicable).** None attached

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*\*indicates information is required per 7 CFR 3016.40 and 7 CFR 3019.5*

Approved and signed by

\_\_\_\_\_ Date: \_\_\_\_\_  
Megan L. Abraham (Cooperator) (ROCR)

\_\_\_\_\_ Date: \_\_\_\_\_  
Jason Allen (SPHD/ADODR)