

# The 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Accomplishment Report for the State of Indiana



## Indiana Cooperative Agricultural Pest Survey (CAPS) Program

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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### State Survey Committee Members:

Name	Organization	Discipline
Dr. Christopher Pierce	Purdue University	Entomology/ Invasive Species
Dr. Robert Waltz, SPRO	IN Dept. Natural Resources	Entomology/ Regulatory Science
Gary Simon, SPHD	USDA APHIS PPQ	Regulatory Science
Dr. Steve Yaninek	Purdue University	Biological Control/ Invasive Species
Phil Marshall	IN Dept. Natural Resources	Forest Health
Cloyce Hedge	IN Dept. Natural Resources	Plant Ecology/ Identification
Ellen Jacquart	The Nature Conservancy and IPSAWG	Plant Ecology/ Identification
James Carroll	USDA APHIS PPQ	Forest Health
Jim Pheasant	CERIS	NAPIS
Gail Ruhl	Purdue University	Plant Disease Diagnostics
Dr. Karen Rane	Purdue University	Plant Pathology
Dr. Cliff Sadof	Purdue University	Ornamental Pests/ Identification
Dr. Chris Oseto	Purdue University	Entomology/ Identification
Dr. Raymond Martyn	Purdue University	Botany/ Plant Pathology
Dr. Peter Hirst	Purdue University	Horticulture
Steve Cain	Purdue University, E.D.E.N.	Disaster Education & Outreach
Jodie Ellis	Purdue University	Entomology/ Outreach Education

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## Indiana CAPS State Survey Committee Meeting Minutes (May 4, 2005)

**Attendees:** Christopher Pierce  
Steven Yaninek  
Bob Waltz, SPRO  
Gary Simon, SPHD  
Gail Ruhl  
Karen Rane  
Ellen Jacquart  
Jodie Ellis  
Cliff Sadof  
Kay Hagen for Steve Cain  
Phil Marshall

**New members:** Ellen Jacquart, TNC and IPSAWG Chair  
Jodie Ellis, Outreach Education Entomology  
Steve Cain, E.D.E.N.

### **2004 review:**

1. EAB
2. SOD and Ralstonia
3. Hit Zone Survey
  - \* In 2004, first report of Banded elm bark beetle in Bloomington, IN
  - \* At this time, we are furthest eastern state
4. Kudzu and Giant hogweed
  - \* 76 acres of Kudzu in Indiana
5. Aquatic invasive plants
6. Giant African Land Snail

### **2005 surveys and activities:**

- EAB
  - SOD
  - Hot Zone Survey
  - Old worm bollworm
  - Ralstonia
  - Kudzu
  - Gypsy moth
  - Karnal bunt
  - Pine shoot beetle
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### FY 2006 Budget and Surveys:

- There will be separate line-item for money for soybean rust by 2006
- Have only received 4 Mini Risk Assessments for the 35 pests on the National CAPS list for FY 2006
- **Karen Rane:** What does have separate line item monies? Can we find this out in writing? This will impact Soybean Rust and SOD. The policy has changed for how they will do surveys this year.
- **Bob W.:** APHIS is going through a lot with their budgets; they have indicated that Soybean Rust and SOD will not be included as line items. EAB is being considered but because the focus is regional, it doesn't look good. Even with line-item approval, you may not see \$\$\$ until later the next year.
- **Karen:** How can we make plans and proposals without knowing what APHIS is going to do? There are important pathogens on the list.
- The pest list will now be used for 2 years: We are to focus on the top 6 pests in the CAPS list.
- **Gary Simon:** What is the role of outreach and education in Giant African Land Snail? Are we supposed to go into pet stores or what for survey? They can't survive here. This only makes sense in the Southern States.
- **Robert Waltz:** I agree. I am not sure what CPHIS is recommending.
- British Root-knot can't survive here, so it is a moot point.
- How are we going to survey for *Agrilus biguttatus*? In collections?
- **Christopher Pierce** suggests that the focus be on Giant African Land Snail. May be able to survey Siberian Silk Moth at the ports while surveying for Gypsy moth.
- **Jim Pheasant.** These 6 pests came from a ranking process from CPHIS based on a number of factors from input on various experts. Also, the commodities being attacked and human health factors. The future goal is to go to a more commodity based survey. CPHIS wasn't ready to give support to Soybean Rust, etc., based on this list. We need something to show Congress for a product so this list may be a good way to proceed.
- **Steve Yaninek to Robert Waltz:** Is most of your input to APHIS from the Plant Board.
- **Robert Waltz:** It depends on the issue...
- **Robert Waltz:** I think we should focus more on a regional approach that is more commodity-focused that enhances ability to export. Bill Kaufman will be at the Eastern CAPS regional meeting to talk about the regionalization of surveys.
- **Christopher Pierce:** For species under #6 on the National List, there are no risk assessments and many have not been surveyed for. There are new pests on this list that could be placed in the Hot Zone (SWPM) survey.
- **Christopher Pierce:** When I talked to WI CAPS, they do a fruit program. Their CAPS coordinator is through the Dept of Ag so the survey is coordinated with other surveys through Ag people. Their Dept of Ag works closely with growers. If you piggy-back with existing programs, you will get a lot farther. Should we work with Christian, for example? Plant pathology? Weed science? They are doing this in Iowa. Iowa State, the



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Iowa Department of Agriculture, and CAPS share the load and look at endemics and exotics all at the same time. Since we are working with Forest Service, we can do a more expansive survey and include things we aren't currently doing.

- **Bob Waltz** says he can get some info on some of the insect groups on his desk that he can share. There is the classic issue of regulatory issues. We try to keep regulation separate from extension issues?
- **Jim Pheasant:** The President's budget is \$45 million at this time. Last year CAPS got the basic core plus \$25K.

### FY 2006 Indiana Invasive Species Pest List:

- **Christopher Pierce:** Next topic: Updating FY 2005 list for 2006.
    - Please start submitting ideas for this list. Ellen should send information on invasive plants. Let us know what should be added or removed.
    - The list has been sent to the Extension folks for their input.
    - Suggested species are added as they are noted because they are important to at least one group. At this time, none are screened out. We can go over this at the next meeting.
    - **Steve Yaninek** says that this is not useful – it is just an inventory list. We need to focus and sort this out. Be somewhat subjective and create a focus.
    - **Christopher Pierce** stated that this is where a top 10 list comes in. However, to create a list of top ten invasive pests, it will continually be edited depending upon the next threat as well as the yearly pest lists.
    - **Ellen Jacquart:** Is there a set list of criteria within CAPS used to select things on the list? Do we focus on things that are just coming in?
    - **Christopher Pierce:** Yes, we focus on new things but old things that are very important (garlic mustard) are included.
    - **Karen Rane:** We need the criteria list so we can know how to approach this. How is the list defined?
    - **Gail Ruhl:** Do we prioritize according to subgroups? This might be a good way to do this.
    - **Robert Waltz:** This seems a good approach and worthy of discussion. From a regulatory standpoint, AAB and BEBB are not an issue, but they are an issue in other arenas (extension, etc).
    - **Karen Rane:** Searchable Categories: Stakeholders, commodities, state regulatory agents, industry, grower groups, pathways .....
    - **Phil Marshall:** Risk issues – primary and secondary. This category will be dynamic from year to year. We need a matrix of all these things to come up with a top ten list.
    - **Jim Pheasant:** This has strong similarities to what they are trying to do at the national level. There is a lot of thought going on along these lines. You can see Eastern/Western differences and sometimes there isn't agreement, but there is
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dialog. Risk is a factor that is considered (risk of introduction, risk of establishment)

- **Ellen Jacquart:** What about the non-commodity? What about natural areas?
- **Jim Pheasant:** There are some categories in place that address this (“Natural Resources”).
- **Phil Marshall:** Habitat is a commodity. Right now, forestry is producing risk maps for Congress on where the forests are at risk of dying. We set up multi-criteria: they are using GIS systems, etc. A similar group to this one developed the criteria used for these maps.
- **Christopher Pierce:** Are we going to have enough time to develop the criteria for submission by July 1? Let us begin to update Indiana’s state invasive pest list. At the same time, develop the top ten list.
- **Robert Waltz:** Let’s do the top 3 insects, the top 3 weeds, etc. to keep the system balanced.
- **Cliff Sadof:** So everybody ranks their taxa and then we take the top 3 of our target group?
- **Robert Waltz.** Yes. In the interim this buys us a lot of credibility by demonstrating a lot of diversity in the group.
- **Steve Yaninek:** Bio-crossroads report identifies Ag commodities. Suburban areas deserve to be a category too. Hardwood forests are the top commodity. (Request for Steve Yaninek to send this to the group).

### Indiana CAPS Website:

- **Christopher Pierce:** The new website.
  - We need committee input. The site is in the development phase.
  - We will have links to State, University, and Federal sites.
  - Can put meeting minutes here and links about Invasive Species.
  - Chris would like to create a list of all agencies that work on invasive species for reference on the web. It will enhance the CAPS community and give people an idea of what is going on in the state of Indiana. He will maintain the website.
  - **Cliff Sadof:** How does this relate to the IDNR invasive species website? How does it differ?
  - **Christopher Pierce:** The CAPS site is a clearing house for info on what the state is doing and will provide information on pests and state surveys.
  - **Steve Yaninek:** Be careful about being redundant. Work with Extension people on the web design: Example: pest alerts should be on the top page. This will be a place for the Annual Report. Coordinate with other sites.
  - **Christopher Pierce:** This is a supplementary site to enhance other sites within the state (i.e. IDNR, IPSAWG, etc.).
  - **Ellen Jacquart:** Is there a set list of criteria within CAPS used to select things on the list? Do we focus on things that are just coming in?
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- **Christopher Pierce:** Yes, we focus on new things but old things that are very important (garlic mustard) are included.
  - **Karen Rane:** We need the criteria list so we can know how to approach this. How is the list defined?
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  - **Phil Marshall:** Risk issues – primary and secondary. This category will be dynamic from year to year. We need a matrix of all these things to come up with a top ten list.
  - **Jim Pheasant:** This has strong similarities to what they are trying to do at the national level. There is a lot of thought going on along these lines. You can see Eastern/Western differences and sometimes there isn't agreement, but there is dialog. Risk is a factor that is considered (risk of introduction, risk of establishment)
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  - **Steve Yaninek:** Bio-crossroads report identifies Ag commodities. Suburban areas deserve to be a category too. Hardwood forests are the top commodity. (Request for Steve Yaninek to send this to the group).
  - **Christopher Pierce:** Should we have pest alerts for Indiana
  - **Robert Waltz:** We have some for IPSAWG, etc. but they are regionally focused. There are some on the Invasive species site.
  - **Phil Marshall:** Forest Health Protection in St. Paul will have some pest alerts.
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- **Christopher Pierce:** We could put pop-ups on the website. Please send me more info.
  
- **The Next Meeting: early or mid-June?**
  - Meet to finalize the budget for 2006.
  - This will be the request for surveys for the FY2006 budget.
  - Remember, added features on taxonomic support in the work plans – this is new.
  - **Next meeting date: Wednesday, June 8<sup>th</sup>, 9:00 AM till noon in Room 104 Smith Hall.**
  - Bring your proposals to the table to go over. We will then submit the changes.



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## Indiana CAPS State Survey Committee Meeting Minutes (June 8, 2005)

### 1. Call meeting to order/ Attendance

- Christopher Pierce
- Steven Yaninek
- Bob Waltz, SPRO
- Gary Simon, SPHD
- Karen Rane
- Cliff Sadof
- Phil Marshall

### 2. FY 2006 Survey Core II Proposals (Due July 1<sup>st</sup>, 2005)

#### a. Core I Pest Surveys

*Agrilus biguttatus* (Fabricius), Oak splendour beetle  
*Cynanchum louiseae* Kartesz & Gandhi, Black swallow-wart  
*Monochamus sutor* Linnaeus, Small white-marmorated longhorned beetle  
*Platypus quercivorus* (Murayama), Oak ambrosia beetle  
*Scolytus schevyrewi* Semenov, Banded elm bark beetle  
*Tomicus destruens* (Wollaston), Pine shoot beetle  
*Xylella fastidiosa* Wells et al., Bacterial leaf scorch  
*Xylosandrus crassiusculus* (Motschulsky), Asian ambrosia beetle

#### b. Core II Pest Surveys

Giant African Land Snail Education and Outreach                      Amount: \$1,000.00

- State Survey Coordinator

Hot Zone (Exotic invasive bark and wood boring beetles) survey    Amount:  
\$10,000.00

- State Survey Coordinator and James Carroll

Old world bollworm survey    Amount: \$2,500.00

- State Survey Coordinator

Sudden oak death survey    Amount: \$11,500.00

- State Survey Coordinator, Karen Rane, and Gail Ruhl

#### c. Core III Pest Surveys

Gypsy moth, *Lymantria dispar* Linnaeus, program includes Indiana Department of Natural Resources – Divisions of Forestry and Entomology & Plant Pathology, USDA APHIS PPQ, and USDA Forest Service, and Department of Interior. Data is geo-referenced and submitted to US Forest Service as part of the Gypsy Moth Slow the Spread National Database. USDA APHIS PPQ will also set traps for the Asian Gypsy moth, *Lymantria dispar* ssp., the Siberian silk moth, *Dendrolimus superans sibiricus* Tschetverikov, and the Russian (pink) Gypsy moth, *Lymantria mathura* Moore, in northern Indiana.

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Pine shoot beetle survey is operated primarily by USDA APHIS PPQ. Indiana DNR handles the State quarantine compliance and monitors nurseries and production areas.

Hot Zone survey is coordinated by USDA APHIS PPQ and the Indiana CAPS SSC. Indiana DNR takes non-targets and hires pinners and assistant curators at Purdue University to prepare and alpha-screen material. Purdue University plays a critical role in overseeing the curation and coordination of the specimens and identifier contacts. Indiana DNR contracts with professional beetle identifiers to provide identifications of materials collected. Beetles targeted will also include, *Agilus biguttatus* (Fabricius), Oak splendour beetle, *Monochamus sutor* Linnaeus, Small white-marmorated longhorned beetle, *Platypus quercivorus* (Murayama), Oak ambrosia beetle, *Scolytus schevyrewi* Semenov, Banded elm bark beetle, *Tomicus destruens* (Wollaston), Pine shoot beetle, and *Xylosandrus crassiusculus* (Motschulsky), Asian ambrosia beetle.

Indiana DNR conducts surveys for non-target species in possible gypsy moth treatment areas in compliance with the National Environmental Policy Act (N.E.P.A.). Indiana DNR is studying beetle populations in old growth forests through collaborative efforts at Ball State University. These activities resulted in excess of an estimated 1 million insect specimens in 2002 alone. IPSAWG, Invasive Plant Species Assessment Working Group, is conducting surveys throughout the state for invasive weed species including exotic weeds by utilizing approximately 70 *bona fide* plant survey volunteers who are competent botanists. Invasive weed species data is being acquired and entered into NAPIS.

Division of Forestry, Division of Entomology & Plant Pathology, and USDA APHIS PPQ are cooperatively conducting surveys for emerald ash borer. Purdue University will be producing insect identification kits and training videos for educational outreach.

USDA APHIS PPQ will draw and submit samples for karnal bunt testing of wheat samples gathered according to USDA guidelines as part of the ongoing National Karnal bunt survey.

Indiana Department of Natural Resources, Division of Nature Preserves, will conduct a state-wide survey for *Heracleum mantegazzianum* Sommier & Levier, Giant Hogweed.

Emergency detection and monitoring of other new exotic pests and diseases may arise during the course of the fiscal year.

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### **3. Pest List**

- a. We updated the FY 2005 Invasive Species of concern to Indiana. We chose not to develop a Top 10 list on Invasive species. We decided to create a list of “Unwanted invasive pests” for the state of Indiana.

### **4. Website**

- a. Suggestions and comments are still being accepted. Target date of August 31, for the website to up and running.

### **5. Adjourn**



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Date Range: 01-01-2005 thru 12-31-2005

State: INDIANA

\* For nursery records, plant counts may have been recorded in lieu of sites.

Target Pest	Counties	Sites*Plants	Traps	Positive	Negatives
SUDDEN OAK DEATH GEN. PEST OBSER. PHYTOPHTHORA RAMORUM GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		0	1
SUDDEN OAK DEATH VISUAL PHYTOPHTHORA RAMORUM P RAMORUM NATIONAL NURSERY SURVEY	16	803		0	803
SUDDEN OAK DEATH TISSUE SAMPLING PHYTOPHTHORA RAMORUM P RAMORUM USDA TRACE (FORWARD/BACK)	2	45		0	45
EUROPEAN RED MITE CONSENSUS PANONYCHUS ULMI SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
EMERALD ASH BORER VISUAL AGRILUS PLANIPENNIS EMERALD ASH BORER SURVEY	15	1128		83	1045
BAMBOO BORER LONGHORNED BEETLE TRAP CHLOROPHORUS ANNULARIS TRAP; 40 W BLACKLIGHT	5	8		0	8
BAMBOO BORER LONGHORNED BEETLE GEN. PEST OBSER. CHLOROPHORUS ANNULARIS GENERAL PEST OBSERVATION; LAB CONFIRMED	22	48		0	48



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ASIAN CERAMBYCID (LH.) BEETLE				
	5	8	0	8
TRAP				
ANOPLOPHORA GLABRIPENNIS (LONGHORNED)				
TRAP;40 W BLACKLIGHT				
ASIAN CERAMBYCID (LH.) BEETLE				
	22	48	0	48
GEN. PEST OBSER.				
ANOPLOPHORA GLABRIPENNIS (LONGHORNED)				
GENERAL PEST OBSERVATION; LAB CONFIRMED				
JAPANESE CEDAR LONGHORN BEETLE				
	5	8	0	8
TRAP				
CALLIDIELLUM (PALAEOCALLIDIUM) RUFIPENNE				
TRAP;40 W BLACKLIGHT				
JAPANESE CEDAR LONGHORN BEETLE				
	22	48	0	48
GEN. PEST OBSER.				
CALLIDIELLUM (PALAEOCALLIDIUM) RUFIPENNE				
GENERAL PEST OBSERVATION; LAB CONFIRMED				
LONGHORNED BEETLE; A				
	5	8	0	8
TRAP				
ANOPLOPHORA MALASIACA				
TRAP;40 W BLACKLIGHT				
LONGHORNED BEETLE; A				
	22	48	0	48
GEN. PEST OBSER.				
ANOPLOPHORA MALASIACA				
GENERAL PEST OBSERVATION; LAB CONFIRMED				
LONGHORNED BEETLE; A				
	5	8	0	8
TRAP				
HESPEROPHANES (TRICHOFERUS) CAMPESTRIS				
TRAP;40 W BLACKLIGHT				

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LONGHORNED BEETLE; A	22	48	0	48
GEN. PEST OBSER. HESPEROPHANES (TRICHOFERUS) CAMPESTRIS GENERAL PEST OBSERVATION; LAB CONFIRMED				
SAWYER BEETLE; A	5	8	0	8
TRAP MONOCHAMUS ALTERNATUS TRAP;40 W BLACKLIGHT				
SAWYER BEETLE; A	22	48	0	48
GEN. PEST OBSER. MONOCHAMUS ALTERNATUS GENERAL PEST OBSERVATION; LAB CONFIRMED				
BROWN SPRUCE LONGHORNED BEETLE	5	8	0	8
TRAP TETROPIUM FUSCUM TRAP;40 W BLACKLIGHT				
BROWN SPRUCE LONGHORNED BEETLE	22	48	0	48
TRAPPING TETROPIUM FUSCUM NATIONAL EXOTIC WOODBORER/BARK BEETLE				
LONGHORNED BEETLE; A	5	8	0	8
TRAP TETROPIUM CASTANEUM TRAP;40 W BLACKLIGHT				
LONGHORNED BEETLE; A	22	48	0	48
TRAPPING TETROPIUM CASTANEUM NATIONAL EXOTIC WOODBORER/BARK BEETLE				

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CITRUS LONGHORNED BEETLE	5	8	0	8
TRAP				
ANOPLOPHORA CHINENSIS				
TRAP;40 W BLACKLIGHT				
CITRUS LONGHORNED BEETLE	22	48	0	48
GEN. PEST OBSER.				
ANOPLOPHORA CHINENSIS				
GENERAL PEST OBSERVATION; LAB CONFIRMED				
CERAMBYCID BEETLE; A	5	8	0	8
TRAP				
XYLOTRECHUS SPP.				
TRAP;40 W BLACKLIGHT				
CERAMBYCID BEETLE; A	22	144	0	144
TRAPPING				
XYLOTRECHUS SPP.				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
BROWN FIR LONGHORNED BEETLE	5	8	0	8
TRAP				
CALLIDIPELLUM VILLOSULUM				
TRAP;40 W BLACKLIGHT				
BROWN FIR LONGHORNED BEETLE	22	48	0	48
GEN. PEST OBSER.				
CALLIDIPELLUM VILLOSULUM				
GENERAL PEST OBSERVATION; LAB CONFIRMED				
CEREAL LEAF BEETLE (CLB)	92	92	92	0
CONSENSUS				
OULEMA MELANOPUS				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				



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PLUM CURCULIO				
CONSENSUS	92	92	92	0
CONOTRACHELUS NENUPHAR				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
ALFALFA WEEVIL				
CONSENSUS	92	92	92	0
HYPERA POSTICA				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
JAPANESE BEETLE (JB)				
CONSENSUS	92	92	92	0
POPILLIA JAPONICA				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
SMALLER EUR. ELM BARK BEETLE				
CONSENSUS	92	92	92	0
SCOLYTUS MULTISTRIATUS				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
PINE SHOOT BEETLE (PSB)				
TRAP	10	80	1	79
TOMICUS PINIPERDA				
TRAP;LINDGREN				
PINE SHOOT BEETLE (PSB)				
TRAPPING	22	48	0	48
TOMICUS PINIPERDA				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
PINE SHOOT BEETLE (PSB)				
CONSENSUS	65	65	65	0
TOMICUS PINIPERDA				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				

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ASIAN AMBROSIA BEETLE; AN	1	1	1	0
TRAP				
XYLOSANDRUS CRASSIUSCULUS				
TRAP;LINDGREN				
ASIAN AMBROSIA BEETLE; AN	22	48	0	48
GEN. PEST OBSER.				
XYLOSANDRUS CRASSIUSCULUS				
GENERAL PEST OBSERVATION; LAB CONFIRMED				
SPRUCE BARK BEETLE	22	48	0	48
TRAPPING				
IPS TYPOGRAPHUS				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
SCOLYTID BEETLE; A	22	48	0	48
TRAPPING				
XYLEBORUS SP.				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
SIXTOOTHED BARK BEETLE	22	48	0	48
TRAPPING				
IPS SEXDENTATUS				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
REDHAired PINE BARK BEETLE	22	48	0	48
TRAPPING				
HYLURGUS LIGNIPERDA				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
MEDITERRANEAN PINE ENGRAVER	22	48	0	48
TRAPPING				
ORTHOTOMICUS EROSUS (IPS EROSUS)				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				

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## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

SIXTOOTHED SPRUCE BARK BEETLE	22	48	0	48
TRAPPING				
PITYOGENES CHALCOGRAPHUS				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
BARK BEETLE; A	22	48	0	48
TRAPPING				
HYLURGOPS PALLIATUS				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
LESSER PINE SHOOT BEETLE	22	48	0	48
TRAPPING				
TOMICUS MINOR				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
EXOTIC BARK BEETLE; AN	22	48	0	48
TRAPPING				
TRYPODENDRON DOMESTICUM (XYLOTERUS D'CUS)				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
BARK BEETLE; A	22	48	0	48
TRAPPING				
SCOLYTUS SCHEVYREWI				
NATIONAL EXOTIC WOODBORER/BARK BEETLE				
HESSIAN FLY	92	92	92	0
CONSENSUS				
MAYETIOLA DESTRUCTOR				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
APPLE MAGGOT (AM)	92	92	92	0
CONSENSUS				
RHAGOLETIS POMONELLA				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				



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SPOTTED ALFALFA APHID	92	92	92	0
CONSENSUS				
THERIOAPHIS MACULATUS				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
SOYBEAN (SOYA BEAN) APHID	92	92	92	0
CONSENSUS				
APHIS GLYCINES				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
POTATO LEAFHOPPER	92	92	92	0
CONSENSUS				
EMPOASCA FABAE				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
SAN JOSE SCALE (SJS)	92	92	92	0
CONSENSUS				
QUADRASPIDIOTUS PERNICIOSUS				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
PEAR PSYLLA	92	92	92	0
CONSENSUS				
CACOPSYLLA PYRICOLA				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
GYPHY MOTH (EUROPEAN) (GM)	9	1612	633	979
TRAP				
LYMANTRIA DISPAR				
TRAP;MILK CARTON PHEROMONE (GYP MOTH)				
GYPHY MOTH (EUROPEAN) (GM)	91	14663	825	13838
TRAP				
LYMANTRIA DISPAR				
TRAP;DELTA PHEROMONE				



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GYPSY MOTH (EUROPEAN) (GM)	7	7	7	0
CONSENSUS				
LYMANTRIA DISPAR				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
ASIAN GYPSY MOTH (AGM)	1	10	0	10
TRAP				
LYMANTRIA DISPAR SSP.				
TRAP;MILK CARTON PHEROMONE (GYP MOTH)				
BOLLWORM;CORN EARWORM;(BW-CEW)	92	92	92	0
CONSENSUS				
HELICOVERPA ZEA (TOMATO FRUITWORM;PODW)				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
FALL ARMYWORM (FAW)	92	92	92	0
CONSENSUS				
SPODOPTERA FRUGIPERDA				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
OLD WORLD BOLLWORM	6	30	0	30
TRAP				
HELICOVERPA ARMIGERA				
TRAP;HELIOTHIS LURE				
EUROPEAN CORN BORER (ECB)	92	92	92	0
CONSENSUS				
OSTRINIA NUBILALIS				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
EUROPEAN PINE SHOOT MOTH(EPSM)	92	92	92	0
CONSENSUS				
RHYACIONIA BOULIANA				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				



## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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SOYBEAN CYST NEMATODE (SCN)	17	30	13	17
GEN. PEST OBSER.				
HETERODERA GLYCINES				
GENERAL PEST OBSERVATION; LAB CONFIRMED				
SOYBEAN CYST NEMATODE (SCN)	81	81	81	0
CONSENSUS				
HETERODERA GLYCINES				
SCIENTIFIC CONSENSUS/GENERAL AGREEMENT				
KUDZU	16	23	23	0
VISUAL				
PUERARIA LOBATA				
WEED SURVEY GENERAL; INF. AREA				
GIANT HOGWEED	79	79	0	79
VISUAL				
HERACLEUM MANTEGAZZIANUM				
WEED SURVEY GENERAL; INF. AREA				



# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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## Indiana CAPS State Survey Activities – 2005

**Project Coordinator:** Dr. Christopher M. F. Pierce

**State:** Indiana

**Project:** Hot Zone (Exotic invasive bark and wood boring beetles) Survey

**Project Category (Part I, II, or III – see page 2-1 of CAPS Guidelines):**

Part II, it is expected that the SSC in Part I will be involved heavily in this activity as well.

**Pests (include survey targets described in Part I, or Core, category):**

Scientific Name:

*Anoplophora chinensis* (Forster)

*Anoplophora glabripennis* (Motschulsky)

*Callidiellum rufipenne* (Motschulsky)

*Chlorophorous annularis* Fabricius

*Hesperophanes (Trichoferus) campestris*  
(Faldermann)

*Hylurgops (Hylurgus) palliatus* Gyllenhal (conifer)

*Hylurgus ligniperda* (Fabricius)

*Ips sexdentatus* (Boerner)

*Ips typographus* (Linnaeus)

*Monochamus alternatus* Hope

*Orthotomicus erosus* (Wollaston)

*Pityogenes chalcographus* (Linnaeus)

*Tetropium castaneum* Linnaeus

*Tetropium fuscum* (Fabricius)

*Tomicus minor* (Hartig)

*Tomicus piniperda* (Linnaeus)

*Trypodendron domesticum* (Linnaeus)

*Xyleborus spp.*

*Xylotrechus spp.*

Common Name:

Citrus longhorned beetle

Asian longhorned beetle

Small Japanese cedar longhorned beetle

Bamboo /tiger bamboo longhorned beetle

Chinese longhorned beetle

Exotic bark beetle

Golden-haired bark beetle

Six-spined engraver beetle

European spruce bark beetle

Japanese pine sawyer beetle

Mediterranean pine engraver beetle

Six-toothed spruce engraver

Black spruce longhorned beetle

Brown spruce longhorned beetle

Lesser pine shoot beetle

Common pine shoot beetle

European hardwood ambrosia beetle

Exotic bark beetles

Exotic longhorned beetles

### **I) OBJECTIVES AND NEED FOR ASSISTANCE:**

The purpose of this survey selected businesses and warehouses in Indiana that receive solid wood packing material (SWPM) to document pest movement of United States and North America invasive bark and wood boring beetles in warehouses in conjunction with USDA APHIS PPQ officers in Indiana. In Indiana, over 4.3 million acres of high quality hardwood forests support an industry which employs 47,000 Hoosiers are at risk of exotic invasive bark and woodboring beetles.

### **II) RESULTS OR BENEFITS EXPECTED:**

The Indiana CAPS program in conjunction with USDA APHIS PPQ seeks to conduct a cooperative agricultural pest survey program which is expected to result in the detection or absence of exotic invasive

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## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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bark and woodboring beetles in Indiana via solid wood packing material (SWPM). Early detection and outreach education are the goals of this survey.

### **III) APPROACH:**

In conjunction with Indiana USDA APHIS PPQ Officers and the Indiana CAPS program, 50 sites will be selected following guidelines from the Exotic Wood Borer Bark Beetle Field manual 2004. The Indiana CAPS program will be responsible for 7 sites in central Indiana. Three Lindgren funnel traps will be placed and serviced in each of the 7 selected sites. Traps will contain one of the following lures: UHR ethanol, UHR ethanol/ alpha-pinene, and Tri-lure. Traps will be placed in mid-March and serviced bi-weekly until mid-October (approximately 30 sampling dates). Visual surveys for invasive wood boring beetles and metallic wood boring beetles will also occur bi-weekly. Samples will be prescreened by summer interns. Suspect specimens would be identified by Dr. Christopher Pierce for identification. Dr. Cliff Sadof and Dr. Jeffrey Holland will also assist in identification of bark and longhorned beetles. All records are to be entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.

#### **A) The Cooperator and APHIS mutually agree to/that:**

- i. Maintain a State Cooperative Agricultural Pest Survey Committee that will meet at least once a year to discuss fostering the goals of CAPS.
- ii. Work together in carrying out filed surveys, trapping, and data collection, setting emphasis on exotic invasive bark and woodboring beetles identified (**see attached list**), that may pose an immediate risk to the natural resources of the state of Indiana and the United States.
- iii. Have representation at National and/or Regional annual planning meetings.
- iv. Utilize Cooperator and APHIS program funding, as outlined in the Financial Plan, within the authorized parameters to support survey and detection activities. In addition, specific appropriated funding in the level authorized by the PPQ Eastern Region will be dedicated to the delivery of CAPS objectives listed above.

#### **B) The Cooperator will:**

- i. The selected survey sites will be selected following guidelines from the Exotic Wood Borer Bark Beetle Field manual 2004. The Indiana CAPS program will be responsible for 7 sites in central Indiana. Three Lindgren funnel traps will be placed and serviced in each of the 7 selected sites. Traps will contain one of the following lures: UHR ethanol, UHR ethanol/ alpha-pinene, and Tri-lure. Traps will be placed in mid-March and serviced bi-weekly until mid-October (approximately 30 sampling dates). Visual surveys for invasive wood boring beetles and metallic wood boring beetles will also occur bi-weekly. Samples will be prescreened by summer interns. Suspect specimens would be identified by Dr. Christopher Pierce for identification. Dr. Cliff Sadof and Dr. Jeffrey Holland will also assist in identification of bark and longhorned beetles. All records are to be entered into the NAPIS
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## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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- database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.
- ii. Provide the following resources
- (1) List types of personnel and what they will be doing.
    - (a) Are they currently employed? No.
    - (b) Will employees need to be hired? Are they full time or part time, and what mechanism will be used to hire them? A full time summer intern will be employed in the Department of Entomology at Purdue University hired by the Indiana CAPS program.
    - (c) Are they paid or volunteer? Paid.
  - (2) **Type of equipment provided by Cooperator for personnel**
    - (a) Identify major equipment needs: N/A
    - (b) Use of the equipment purchased: N/A
    - (c) Purchased with APHIS funds? N/A
    - (d) Method of procurement: N/A
    - (e) Method of disposition: N/A
  - (3) Provide office space in the **Department of Entomology at Purdue University** with associated services and utilities, computers and other office equipment to for the use of Cooperator personnel in entering survey data into the NAPIS database
  - (4) **Vehicles for Cooperator personnel in conducting field surveys and collecting data.**
  - (5) **Supplies**
    - (a) Trapping supplies for field surveys? Pheromones will be procured from Pherotech.
    - (b) Special Supplies: N/A
    - (c) Method of procurement: Indiana CAPS budget
- iii. Contracts:
- (a) Who will handle contractual needs? Mr. Ryan Selby in the Business Office in the Department of Entomology at Purdue University.
  - (b) Cooperator Procurement activities shall be in accordance with A-102 and A-110.
  - (c) Special requirements: N/A
- iv. Reports – submit all reports to the APHIS Authorized Department Officer’s Designated Representative (ADODR). Reports include:
- (1) Narrative accomplishment reports (**Accomplishment Report – Appendix H of the ER CAPS Guide**) in the frequency and time frame specified in the Notice of Award, Article 4.
  - (2) Financial Status Reports, SF-269, in the frequency and time frame specified in the Notice of Award, Article 4.
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## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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- v. **Adhere to APHIS ADP security guidelines as referenced in the Notice of Award when entering pest survey data and transmitting it to NAPIS.**

### **C) APHIS will:**

- i. **List any activities that are specific to APHIS, e.g., provide training, provide forms, review data.** USDA APHIS PPQ will be responsible for providing information regarding survey sites, surveying of survey sites, prescreening of trap material, and reviewing data to enhance future survey work.
- ii. Provide the following resources:
  - (1) List types of personnel and what they will be doing: USDA APHIS PPQ officers will survey visually and with traps at selected sites in Indiana for exotic invasive bark and woodboring beetles and prescreen samples. Samples will then be sent to the Indiana CAPS SSC for further identification.
  - (2) Federal Equipment for its personnel: N/A
  - (3) Federal Equipment for use of the Cooperator personnel, e.g. vehicles: N/A
  - (4) Funds to the Cooperator to cover costs outlined in the Financial Plan. In addition, specific appropriated funding, in the level authorized by the APHIS Eastern Region, will be dedicated to the delivery of CAPS objectives listed above.
  - (5) Provide educational outreach resources (ex. fact sheets) for survey.

### **D) OTHER PARTIES TO WHO WILL WORK ON THE PROJECT:**

- i. **Discuss interaction with other contributing parties to this effort. What is their role? Note that the State and APHIS do not have authority to commit other parties unless they have contracts, subgrants, or other such legally binding authority to do so:** N/A
- ii. List all who will work on the project:
  - (1) Dr. Cliff Sadof
  - (2) Dr. Jeffrey Holland
- iii. Describe the nature of their effort:
  - (1) Dr. Cliff Sadof and Dr. Jeffrey Holland will enhance our taxonomic ability in our survey work.

### **IV) QUANTITATIVE PROJECTION OF ACCOMPLISHMENTS TO BE ACHIEVED:**

Traps will be placed in mid-March and serviced bi-weekly until mid-October (approximately 30 sampling dates). Visual surveys for invasive wood boring beetles and metallic wood boring beetles will also occur bi-weekly. Samples will be prescreened by summer interns. Suspect specimens would be identified by Dr. Christopher Pierce for identification. All records are to be entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.

### **V) DATA COLLECTION AND MAINTENANCE:**

**Who has the responsibility for delivering what data and to whom and when.**

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## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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Dr. Christopher Pierce is responsible for entering survey data in NAPIS. All records are to be entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.

- A) **Follow the guidelines in Appendix D of the ER CAPS Guide for the correct NAPIS language reporting requirements.**
- B) Identify the kind of data to be collected: Presence or absence of the invasive longhorned, bark, and woodboring beetles.
- C) How will the data be maintained: Excel spread sheet
- D) Establish criteria to evaluate the project:
  - i. **Results:** Completed survey and outreach efforts
  - ii. **Successes:** Survey data complete and entered into NAPIS
- E) Methodology used to determine if:
  - i. **Identified needs are met:** Check all data is in database
  - ii. **Results and benefits are achieved:** Review data and use for planning further surveys and educational efforts

### **VI) GEOGRAPHIC LOCATION OF PROJECT:**

Surveys will be conducted in the **counties of central Indiana. Sites and counties will be selected in the spring of 2006 after the review of FY 2005 survey data.** Data will be provided to the Cooperator's State Regulatory Official (SPRO) for entry into the database.

- A) Identify the type of terrain (cropland, rangeland, woodland, etc.): Industry and warehouse sites
- B) Identify features which may have an impact on the project or activity:
  - i. **Rivers, lakes, etc:** N/A
  - ii. **Wildlife sanctuaries:** N/A

### **VII) TAXONOMIC SUPPORT:**

In order to assure adequate taxonomic support for the CAPS program, the ER Regional CAPS Committee needs you to address this support in your work plans. The six data items needed to manage identification services are listed below. **Note: All work plans must –provide the following (A – F) for each survey.**

If in A you request taxonomic support the ER CAPS Committee and PPQ's National Identification Services will use the information you provide in B – F to assign your survey samples to the appropriate taxonomic personnel of institutions.

- A) Person/institution that will screen samples for target pests OR request for taxonomic support:
    - i. Dr. Christopher Pierce, Jim Carroll, Charlotte Gallowitch, Tim Vawryk, Dr. Cliff Sadof, Dr. Jeffery Holland, and Arwin Provonsha. We request taxonomic support for final confirmation of identification from national identifier for new state and county records.
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## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

B) List of target pests by scientific name:

Scientific Name:

*Anoplophora chinensis* (Forster)  
*Anoplophora glabripennis* (Motschulsky)  
*Callidiellum rufipenne* (Motschulsky)  
*Chlorophorous annularis* Fabricius  
*Hesperophanes (Trichoferus) campestris* (Faldermann)  
*Hylurgops (Hylurgus) palliatus* Gyllenhal (conifer)  
*Hylurgus ligniperda* (Fabricius)  
*Ips sexdentatus* (Boerner)  
*Ips typographus* (Linnaeus)  
*Monochamus alternatus* Hope  
*Orthotomicus erosus* (Wollaston)  
*Pityogenes chalcographus* (Linnaeus)  
*Tetropium castaneum* Linnaeus  
*Tetropium fuscum* (Fabricius)  
*Tomicus minor* (Hartig)  
*Tomicus piniperda* (Linnaeus)  
*Trypodendron domesticum* (Linnaeus)  
*Xyleborus spp.*  
*Xylotrechus spp.*

Common Name:

Citrus longhorned beetle  
 Asian longhorned beetle  
 Small Japanese cedar longhorned beetle  
 Bamboo /tiger bamboo longhorned beetle  
 Chinese longhorned beetle  
 Exotic bark beetle  
 Golden-haired bark beetle  
 Six-spined engraver beetle  
 European spruce bark beetle  
 Japanese pine sawyer beetle  
 Mediterranean pine engraver beetle  
 Six-toothed spruce engraver  
 Black spruce longhorned beetle  
 Brown spruce longhorned beetle  
 Lesser pine shoot beetle  
 Common pine shoot beetle  
 European hardwood ambrosia beetle  
 Exotic bark beetles  
 Exotic longhorned beetles

C) Survey dates: Traps will be placed in mid-March and serviced bi-weekly until mid-October.  
 Number of survey sits: 7

D) Number of traps, visual surveys, etc: Three Lindgren funnel traps will be placed and serviced in each of the 7 selected sites. Traps will contain one of the following lures: UHR ethanol, UHR ethanol/ alpha-pinene, and Tri-lure. Visual surveys for invasive wood boring beetles and metallic wood boring beetles will also occur bi-weekly.

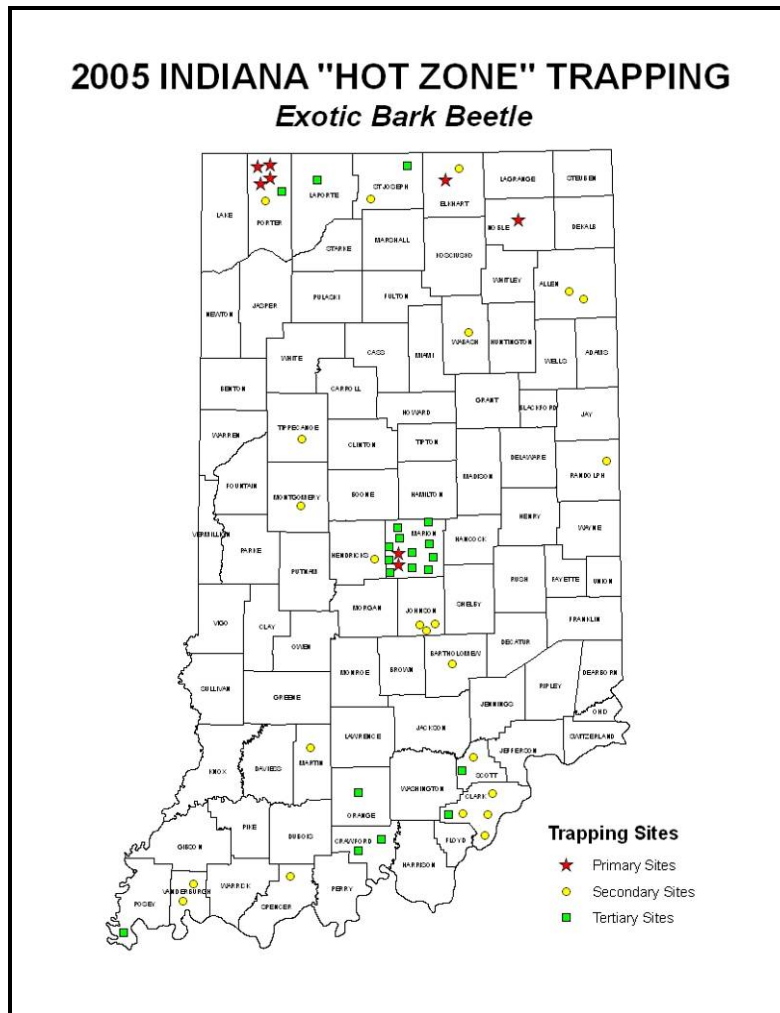
E) Number of collections: Approximately 30 sampling dates

### VIII) BUDGET/DETAILED FINANCIAL PLAN:

Item	Federal Funds	Cooperator Funds
a) Personnel	\$5,000.00	\$0.00
b) Fringe Benefits	\$500.00	\$0.00
c) Travel	\$2,500.00	\$0.00
d) Equipment	\$0.00	\$0.00
e) Supplies	\$2,000.00	\$0.00
f) Contractual	\$0.00	\$0.00
g) Construction	\$0.00	\$0.00
h) Other	\$0.00	\$0.00
i) Total Direct Costs (sum of a – h)	<b>\$10,000.00</b>	<b>\$0.00</b>
j) Indirect Costs	\$0.00	\$0.00
k) TOTALS (sum of i + j)	<b>\$10,000.00</b>	<b>\$0.00</b>



## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana



### IX) BENEFITS AND RESULTS OF SURVEY:

To date, no suspect species have been identified. However, screening of trap material is ongoing. Survey sampling will result in detections or negative findings of the invasive bark and longhorned beetles. Educational outreach was provided to all participants in this program as well as other residents of Indiana. All survey data from each survey will be entered into the NAPIS database.

All survey data from each survey were entered into the NAPIS database. First records for the State and/or County were entered **within 48** hours of confirmation of identification by a qualified identifier. All other required records, both positive and negative, were entered **within two weeks** of confirmation. All records were entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.



# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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**Project Coordinator:** Dr. Christopher M. F. Pierce

**State:** Indiana

**Project:** Old World Bollworm Survey

**Project Category (Part I, II, or III – see page 2-1 of CAPS Guidelines):**  
Part II

**Pests (include survey targets described in Part I, or Core, category):**

Scientific Name:

*Helicoverpa armigera* Hübner

Common Name:

Old world bollworm

## **I) OBJECTIVES AND NEED FOR ASSISTANCE:**

Old world bollworm, *Helicoverpa armigera*, larvae feed on several crops important to Indiana agriculture such as corn, soybeans, alfalfa, and tomatoes. About 5.9 million acres of corn, 5.8 million acres of soybeans, 625 thousand acres of alfalfa, and 7,000 thousands of acres of tomatoes are grown in Indiana each season. The objective is to determine if *H. armigera* is present in the state of Indiana; and to some degree, what extent it may be present.

## **II) RESULTS OR BENEFITS EXPECTED:**

The Indiana CAPS program seeks to conduct a cooperative agricultural pest survey program which is expected to result in information about the presence or absence of a damaging insect not known to occur in Indiana or the United States. Knowledge of the existence of this pest species would be crucial to Indiana agriculture as the state grows nearly 12 million acres of corn and soybeans (two hosts of *H. armigera*); these two principal field crop commodities, corn (\$1.7 billion) and soybeans (\$1.3 billion), in Indiana have on the average a farm gate value slightly over \$3 billion dollars. The production of alfalfa in Indiana averages an annual farm gate value of \$140 million dollars. The production of tomatoes in Indiana averages an annual farm gate value of \$35 million dollars.

## **III) APPROACH:**

Pheromone traps for *H. armigera* will be deployed and serviced in 6 Indiana Counties (Jennings, Knox, Porter, Randolph, Tippecanoe, and Whitley) that contain Purdue Agricultural Centers. Counties were selected using the Old world bollworm MRA criteria and due to the production of corn, soybeans, alfalfa, and tomatoes. Five pheromone traps will be placed and serviced in each of the six counties. Traps will be placed in late June and serviced twice a month for 3 months. Dr. Christopher Pierce will coordinate the survey of Old world bollworm. Traps will be placed and monitored by summer trappers. Dr. Christopher Pierce will be responsible for the identification of samples. Dr. Chris Oseto will assist in the identification of samples.

### **A) The Cooperator and APHIS mutually agree to/that:**

- i. Maintain a State Cooperative Agricultural Pest Survey Committee that will meet at least once a year to discuss fostering the goals of CAPS.
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## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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- ii. Work together in carrying out field surveys, trapping, and data collection, setting emphasis on *Helicoverpa armigera* Hübner that may pose an immediate risk to the agriculture of this state and the United States.
- iii. Will provide lures for the survey program.
- iv. Have representation at National and/or Regional **annual** planning meetings.
- v. Utilize Cooperator and APHIS program funding, as outlined in the Financial Plan, within the authorized parameters to support survey and detection activities. In addition, specific appropriated funding in the level authorized by the PPQ Eastern Region will be dedicated to the delivery of CAPS objectives listed above.

### **B) The Cooperator will:**

- i. Pheromone traps for *H. armigera* will be deployed and serviced in 6 Indiana Counties (Jennings, Knox, Porter, Randolph, Tippecanoe, and Whitley) that contain Purdue Agricultural Centers. Counties were selected using the Old world bollworm MRA criteria and due to the production of corn, soybeans, alfalfa, and tomatoes. Five pheromone traps will be placed and serviced in each of the six counties. Traps will be placed in late June and serviced twice a month for 3 months. Dr. Christopher Pierce will coordinate the survey of Old world bollworm. Traps will be placed and monitored by summer trappers.
- ii. Provide the following resources
  - (1) List types of personnel and what they will be doing.
    - (a) Are they currently employed? No.
    - (b) Will employees need to be hired? Are they full time or part time, and what mechanism will be used to hire them? A full time summer intern will be employed in the Department of Entomology at Purdue University hired by the Indiana CAPS program.
    - (c) Are they paid or volunteer? Paid.
  - (2) **Type of equipment provided by Cooperator for personnel**
    - (a) Identify major equipment needs: N/A
    - (b) Use of the equipment purchased: N/A
    - (c) Purchased with APHIS funds? N/A
    - (d) Method of procurement: N/A
    - (e) Method of disposition: N/A
  - (3) Provide office space in the **Department of Entomology at Purdue University** with associated services and utilities, computers and other office equipment to for the use of Cooperator personnel in entering survey data into the NAPIS database
  - (4) **Vehicles for Cooperator personnel in conducting field surveys and collecting data.**





## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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- (5) **Supplies**
    - (a) **Trapping supplies for field surveys?** N/A
    - (b) Special Supplies: N/A
    - (c) Method of procurement: N/A
  
  - iii. **Contracts:**
    - (a) Who will handle contractual needs? Mr. Ryan Selby in the Business Office in the Department of Entomology at Purdue University.
    - (b) Cooperator Procurement activities shall be in accordance with A-102 and A-110.
    - (c) Special requirements: N/A
  
  - iv. **Reports – submit all reports to the APHIS Authorized Department Officer’s Designated Representative (ADODR). Reports include:**
    - (1) Narrative accomplishment reports (**Accomplishment Report – Appendix H of the ER CAPS Guide**) in the frequency and time frame specified in the Notice of Award, Article 4.
    - (2) Financial Status Reports, SF-269, in the frequency and time frame specified in the Notice of Award, Article 4.
  
  - v. **Adhere to APHIS ADP security guidelines as referenced in the Notice of Award when entering pest survey data and transmitting it to NAPIS.**
- C) APHIS will:**
- i. **List any activities that are specific to APHIS, e.g., provide training, provide forms, review data.**
  
  - ii. Provide the following resources:
    - (1) List types of personnel and what they will be doing: N/A
    - (2) Federal Equipment for its personnel: N/A
    - (3) Federal Equipment for use of the Cooperator personnel, e.g. vehicles? N/A
    - (4) Funds to the Cooperator to cover costs outlined in the Financial Plan. In addition, specific appropriated funding, in the level authorized by the APHIS Eastern Region, will be dedicated to the delivery of CAPS objectives listed above.
    - (5) **Provide lures for the survey program.**
- D) OTHER PARTIES TO WHO WILL WORK ON THE PROJECT**
- i. **Discuss interaction with other contributing parties to this effort. What is their role? Note that the State and APHIS do not have authority to commit other parties unless they have contracts, subgrants, or other such legally binding authority to do so.**
  
  - ii. List all who will work on the project:
    - (1) Dr. Christian Oseto
  
  - iii. Describe the nature of their effort:
    - (1) Enhance the taxonomic capability of Indiana’s survey.
-



## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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- iv. Contribution: N/A

### **IV) QUANTITATIVE PROJECTION OF ACCOMPLISHMENTS TO BE ACHIEVED:**

Pheromone traps for *H. armigera* will be deployed and serviced in 6 Indiana Counties (Jennings, Knox, Porter, Randolph, Tippecanoe, and Whitley) that contain Purdue Agricultural Centers. Counties were selected using the Old world bollworm MRA criteria and due to the production of corn, soybeans, alfalfa, and tomatoes. Five pheromone traps will be placed and serviced in each of the six counties. Traps will be placed in late June and serviced twice a month for 3 months. Dr. Christopher Pierce will coordinate the survey of Old world bollworm. Traps will be placed and monitored by summer trappers. Dr. Christopher Pierce is responsible for entering survey data in NAPIS. All records are to be entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.

### **V) DATA COLLECTION AND MAINTENANCE:**

#### **Who has the responsibility for delivering what data and to whom and when.**

Dr. Christopher Pierce is responsible for entering survey data in NAPIS. All records are to be entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.

- A) **Follow the guidelines in Appendix D of the ER CAPS Guide for the correct NAPIS language reporting requirements.**
- B) Identify the kind of data to be collected: Presence or absence of the invasive longhorned, bark, and woodboring beetles.
- C) How will the data be maintained: Excel spread sheet
- D) Establish criteria to evaluate the project:
  - i. **Results**: Completed survey and outreach efforts
  - ii. **Successes**: Survey data complete and entered into NAPIS
- E) Methodology used to determine if:
  - i. **Identified needs are met**: Check all data is in database
  - ii. **Results and benefits are achieved**: Review data and use for planning further surveys and educational efforts.

### **VI) GEOGRAPHIC LOCATION OF PROJECT:**

Surveys will be conducted in the **6 Indiana Counties (Jennings, Knox, Porter, Randolph, Tippecanoe, and Whitley)**. Data will be provided to the Cooperator's State Regulatory Official (SPRO) for entry into the database.

- A) Identify the type of terrain (cropland, rangeland, woodland, etc.): Cropland
  - B) Identify features which may have an impact on the project or activity.
    - i. **Rivers, lakes, etc**: N/A
    - ii. **Wildlife sanctuaries**: N/A
-



# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

## VII) TAXONOMIC SUPPORT

In order to assure adequate taxonomic support for the CAPS program, the ER Regional CAPS Committee needs you to address this support in your work plans. The six data items needed to manage identification services are listed below. **Note: All work plans must –provide the following (A – F) for each survey.**

If in A you request taxonomic support the ER CAPS Committee and PPQ’s National Identification Services will use the information you provide in B – F to assign your survey samples to the appropriate taxonomic personnel of institutions.

A) Person/institution that will screen samples for target pests OR request for taxonomic support:

- i. Dr. Christopher Pierce and Dr. Christian Oseto. We request taxonomic support for final confirmation of identification from national identifier for new state and county records.

B) List of target pests by scientific name:

*Helicoverpa armigera* Hübner Old world bollworm

C) Survey dates: Traps will be placed in late June and serviced twice a month for 3 months.

D) Number of traps, visual surveys, etc: Pheromone traps for *H. armigera* will be deployed and serviced in 6 Indiana Counties (Jennings, Knox, Porter, Randolph, Tippecanoe, and Whitley) that contain Purdue Agricultural Centers. Counties were selected using the Old world bollworm MRA criteria and due to the production of corn, soybeans, alfalfa, and tomatoes. Five pheromone traps will be placed and serviced in each of the six counties.

E) Number of collections: Approximately 6 sampling dates

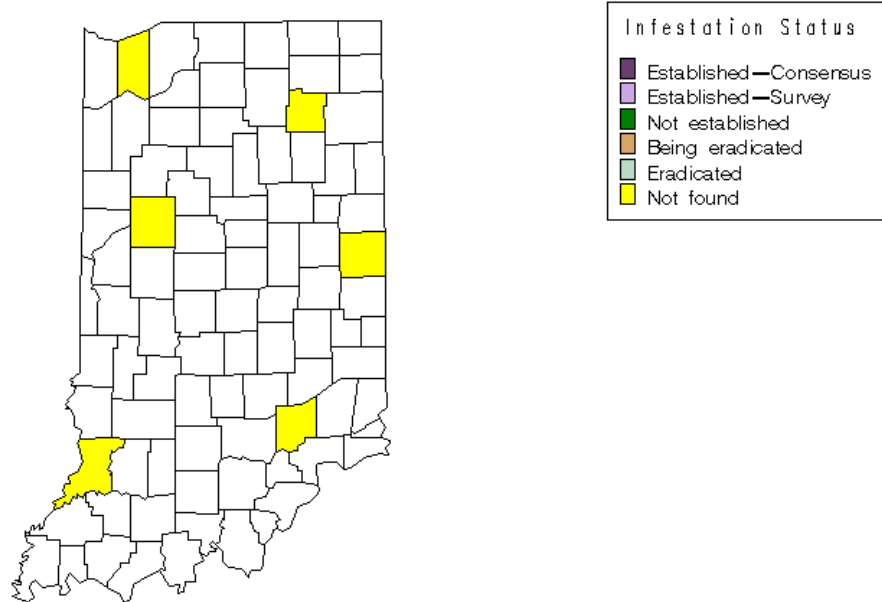
## VIII) BUDGET/DETAILED FINANCIAL PLAN:

Item	Federal Funds	Cooperator Funds
a) Personnel	\$1,500.00	\$0.00
b) Fringe Benefits	\$0.00	\$0.00
c) Travel	\$1,000.00	\$0.00
d) Equipment	\$0.00	\$0.00
e) Supplies	\$0.00	\$0.00
f) Contractual	\$0.00	\$0.00
g) Construction	\$0.00	\$0.00
h) Other	\$0.00	\$0.00
i) Total Direct Costs (sum of a – h)	<b>\$2,500.00</b>	<b>\$0.00</b>
j) Indirect Costs	\$0.00	\$0.00
k) TOTALS (sum of i + j)	<b>\$2,500.00</b>	<b>\$0.00</b>



# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

Reported Status of  
**OLD WORLD BOLLWORM , *HELCOVERPA ARMIGERA***  
in INDIANA (01/01/2005–12/31/2005)  
Data retrieved from National Agricultural Pest Information System on 03/31/2006



The Center for Environmental and Regulatory Information Systems does not certify the accuracy or completeness of the map.  
Negative data spans over last 3 years only.

## **IX) BENEFITS AND RESULTS OF SURVEY:**

This project provided information about the presence or absence of a damaging insect not known to occur in Indiana or the United States. Knowledge of the existence of this pest species is crucial to Indiana agriculture as the state grows nearly 12 million acres of corn and soybeans (two hosts of *H. armigera*). *Helicoverpa armigera* were not present in any of the traps during the 2005 survey season.

All survey data from each survey were entered into the NAPIS database. First records for the State and/or County were entered **within 48** hours of confirmation of identification by a qualified identifier. All other required records, both positive and negative, were entered **within two weeks** of confirmation. All records were entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.



# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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**Project Coordinator:** Gail Ruhl, Dr. Karen Rane, & Dr. Robert Waltz

**State:** Indiana

**Project:** Sudden Oak Death Survey

**Project Category (Part I, II, or III – see page 2-1 of CAPS Guidelines):**  
Part III, with significant involvement of SSC (Part 1).

**Pests (include survey targets described in Part I, or Core, category):**  
*Phytophthora ramorum* Werres *et al.* Sudden oak death

## **I) OBJECTIVES AND NEED FOR ASSISTANCE:**

Sudden Oak Death (SOD) is a plant disease that has the ability to infect a wide range of hosts. Although it is not limited to oak, as the name would seem to imply, dying tanoaks, live oaks and black oaks along the central coast of California in Marin, Santa Cruz and the Big Sur area were the first hosts that brought attention to this disease in 1995. Five years later, in 2000, plant pathologists at the University of California isolated the fungus-like organism causing the death of the tanoaks and oaks. It was an unrecognized *Phytophthora* species which eventually became known as *Phytophthora ramorum*. Presently 28 plant species have been proven as hosts and another 36 plants have been associated with this fungus. Some of those species known to be susceptible to SOD can be grown outdoors in Indiana, including witch hazel, Douglas fir, Japanese pieris, rhododendrons, viburnums and lilacs. In addition, many other plants can serve as hosts on which this fungus-like organism can form spores and then spread to other susceptible plants. SOD has killed tanoaks, black oaks and live oaks in California, tanoaks in Oregon and has been detected on beech, southern red oak, northern red oak and horse chestnut in the UK and Netherlands. SOD has the potential to cause considerable damage to eastern oak forests, which would include the Hoosier national Forest. Bill Bull, assistant state forester in the Indiana Division of Natural Resources (IDNR) states that Indiana has 4.5 million acres of forest land, including 1.8 million acres of oak and hickory-type trees.

In March of 2004, a shipment of 1.6 million plants from a large nursery in California to nurseries and garden centers throughout the United States, including Indiana, inadvertently contained plants infected with *Phytophthora ramorum*. Many of the plants were sold prior to nursery investigation by state and federal inspectors. *Phytophthora ramorum*, initially ‘confined’ on the west coast has now been confirmed in 21 states.

## **II) RESULTS OR BENEFITS EXPECTED:**

The benefits of such a survey would be three-fold. At risk nurseries in the state will be identified and surveyed for the presence of *P. ramorum*. If *P. ramorum* is detected in Indiana, action could be taken to limit the spread of the pathogen and to prevent its introduction into nearby oak forests. The third benefit would be derived from the documentation of negative survey results. Without such documentation, it is impossible to state that a disease does not occur in Indiana. Survey data will be made available to the Cooperative Agricultural Pest Survey (CAPS) through the Indiana State Survey Coordinator, who in turn will input the data into NAPIS.

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## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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### III) APPROACH:

This survey will provide information about the presence or absence of *Phytophthora ramorum*, the causal agent of Sudden Oak Death, in Indiana. Indiana has 1.8 million acres of oak and hickory type trees and ranks 6th in the nation for retail lawn and garden sales. Undetected infections of *P. ramorum* on nursery and garden center plants, could significantly impact the \$3.4 billion retail lawn and garden industry not to mention the oaks in the Hoosier National Forest. IDNR inspectors inspect over 600 Indiana nurseries bi-annually for the presence of diseases and insects. The Purdue P&PDL tested 870 samples submitted by inspectors for SOD testing. Sixty-two samples were forwarded to Beltsville, as per federal guidelines, for conclusive testing. No positive *P. ramorum* samples were found in Indiana nurseries. The P&PDL will continue to partner with the IDNR for SOD surveillance and training in 2006. All records are to be entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.

#### A) The Cooperator and APHIS mutually agree to/that:

- i. Maintain a State Cooperative Agricultural Pest Survey Committee that will meet at least once a year to discuss fostering the goals of CAPS.
- ii. Work together in carrying out filed surveys and data collection, setting emphasis on Sudden Oak Death, *Phytophthora ramorum*, that may pose an immediate risk to the natural resources of the state of Indiana and the United States.
- iii. Have representation at National and/or Regional annual planning meetings.
- iv. Utilize Cooperator and APHIS program funding, as outlined in the Financial Plan, within the authorized parameters to support survey and detection activities. In addition, specific appropriated funding in the level authorized by the PPQ Eastern Region will be dedicated to the delivery of CAPS objectives listed above.

#### B) The Cooperator will:

- i. IDNR inspectors inspect over 600 Indiana nurseries bi-annually for the presence of diseases and insects. The Purdue P&PDL tested 870 samples submitted by inspectors for SOD testing. Sixty-two samples were forwarded to Beltsville, as per federal guidelines, for conclusive testing. No positive *P. ramorum* samples were found in Indiana nurseries. The P&PDL will continue to partner with the IDNR for SOD surveillance and training in 2006. All records are to be entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.
- ii. Provide the following resources
  - (1) List types of personnel and what they will be doing.
    - (a) Are they currently employed? Yes.
    - (b) Will employees need to be hired? Are they full time or part time, and what mechanism will be used to hire them? No



## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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- (c) Are they paid or volunteer? Paid.
  - (2) **Type of equipment provided by Cooperator for personnel**
    - (a) Identify major equipment needs: N/A
    - (b) Use of the equipment purchased: N/A
    - (c) Purchased with APHIS funds? N/A
    - (d) Method of procurement: N/A
    - (e) Method of disposition: N/A
  - (3) Provide office space in the **Department of Entomology at Purdue University** with associated services and utilities, computers and other office equipment to for the use of Cooperator personnel in entering survey data into the NAPIS database
  - (4) **Vehicles for Cooperator personnel in conducting field surveys and collecting data.**
  - (5) **Supplies**
    - (a) Trapping supplies for field surveys? N/A
    - (b) Special Supplies: N/A
    - (c) Method of procurement: N/A
  - iii. **Contracts:**
    - (a) Who will handle contractual needs? Mr. Ryan Selby in the Business Office in the Department of Entomology at Purdue University.
    - (b) Cooperator Procurement activities shall be in accordance with A-102 and A-110.
    - (c) Special requirements: N/A
  - iv. **Reports – submit all reports to the APHIS Authorized Department Officer’s Designated Representative (ADODR). Reports include:**
    - (1) Narrative accomplishment reports (**Accomplishment Report – Appendix H of the ER CAPS Guide**) in the frequency and time frame specified in the Notice of Award, Article 4.
    - (2) Financial Status Reports, SF-269, in the frequency and time frame specified in the Notice of Award, Article 4.
  - v. **Adhere to APHIS ADP security guidelines as referenced in the Notice of Award when entering pest survey data and transmitting it to NAPIS.**
- C) APHIS will:**
- i. **List any activities that are specific to APHIS, e.g., provide training, provide forms, review data.** USDA APHIS PPQ will be responsible for providing information regarding survey sites and reviewing data to enhance future survey work.
  - ii. Provide the following resources:
    - (1) List types of personnel and what they will be doing: N/A
    - (2) Federal Equipment for its personnel: N/A
-



## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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- (3) Federal Equipment for use of the Cooperator personnel, e.g. vehicles: N/A
- (4) Funds to the Cooperator to cover costs outlined in the Financial Plan. In addition, specific appropriated funding, in the level authorized by the APHIS Eastern Region, will be dedicated to the delivery of CAPS objectives listed above.
- (5) Provide educational outreach resources (ex. fact sheets) for education/outreach.

### **D) OTHER PARTIES TO WHO WILL WORK ON THE PROJECT:**

- i. **Discuss interaction with other contributing parties to this effort. What is their role? Note that the State and APHIS do not have authority to commit other parties unless they have contracts, subgrants, or other such legally binding authority to do so:** N/A
- ii. List all who will work on the project: N/A
- iii. Describe the nature of their effort: N/A

### **IV) QUANTITATIVE PROJECTION OF ACCOMPLISHMENTS TO BE ACHIEVED:**

Dr. Karen Rane and Gail Ruhl will oversee and perform laboratory diagnosis of the sudden oak disease survey. Hosts surveyed will be those listed on the most current APHIS list of Hosts and Plants associated with *P. ramorum*. Approximately 400 total samples will be collected. Samples will be packaged accordingly and shipped to the Purdue Plant and Pest Diagnostic Lab to be processed by the procedures sanctioned at that time for *P. ramorum* detection (ELISA and PCR). All records are to be entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.

### **V) DATA COLLECTION AND MAINTENANCE:**

#### **Who has the responsibility for delivering what data and to whom and when.**

Dr. Christopher Pierce is responsible for entering survey data in NAPIS. All records are to be entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.

- A) **Follow the guidelines in Appendix D of the ER CAPS Guide for the correct NAPIS language reporting requirements.**
  - B) Identify the kind of data to be collected: Presence or absence of the SOD
  - C) How will the data be maintained: Excel spread sheet
  - D) Establish criteria to evaluate the project:
    - i. **Results:** Completed survey and outreach efforts
    - ii. **Successes:** Survey data complete and entered into NAPIS
  - E) Methodology used to determine if:
    - i. **Identified needs are met:** Check all data is in database
    - ii. **Results and benefits are achieved:** Review data and use for planning further surveys and educational efforts
-





# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

## **VI) GEOGRAPHIC LOCATION OF PROJECT:**

Surveys will be conducted in the **counties of central Indiana**. **Dr. Robert Waltz will coordinate the collection of nursery samples by IDNR inspectors throughout Indiana**. Data will be provided to the Cooperator's State Regulatory Official (SPRO) for entry into the database.

- A) Identify the type of terrain (cropland, rangeland, woodland, etc.): N/A
- B) Identify features which may have an impact on the project or activity:
  - i. **Rivers, lakes, etc:** N/A
  - ii. **Wildlife sanctuaries:** N/A

## **VII) TAXONOMIC SUPPORT:**

In order to assure adequate taxonomic support for the CAPS program, the ER Regional CAPS Committee needs you to address this support in your work plans. The six data items needed to manage identification services are listed below. **Note: All work plans must –provide the following (A – F) for each survey.**

If in A you request taxonomic support the ER CAPS Committee and PPQ's National Identification Services will use the information you provide in B – F to assign your survey samples to the appropriate taxonomic personnel of institutions.

- A) Person/institution that will screen samples for target pests OR request for taxonomic support:
  - i. Dr. Karen Rane and Gail Ruhl will oversee and perform laboratory diagnosis of the sudden oak disease survey.
- B) List of target pests by scientific name:  
*Phytophthora ramorum* Werres *et al.* Sudden oak death
- C) Survey dates: N/A
- D) Number of traps, visual surveys, etc: Approximately 400 total samples will be collected. Samples will be packaged accordingly and shipped to the Purdue Plant and Pest Diagnostic Lab to be processed by the procedures sanctioned at that time for *P. ramorum* detection (ELISA and PCR).
- E) Number of collections: Approximately 400 samples

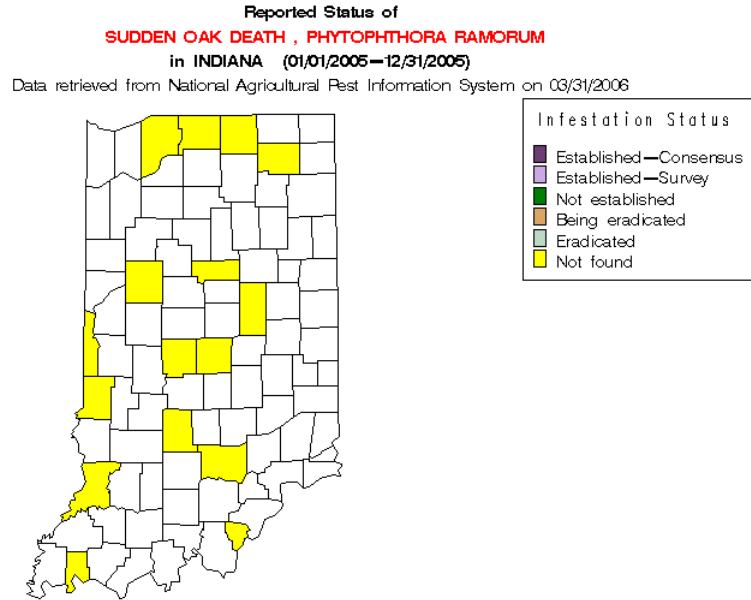
## **VIII) BUDGET/DETAILED FINANCIAL PLAN:**

Item	Federal Funds	Cooperator Funds
a) Personnel	\$2,800.00 (lab techs) \$860.00 (PI)	\$0.00
b) Fringe Benefits	\$640.00	\$0.00
c) Travel	\$1,200.00	\$0.00
d) Equipment	\$0.00	\$0.00
e) Supplies	\$6,000.00	\$0.00
f) Contractual	\$0.00	\$0.00



## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

g) Construction	\$0.00	\$0.00
h) Other	\$0.00	\$0.00
i) Total Direct Costs (sum of a – h)	<b>\$11,500.00</b>	<b>\$0.00</b>
j) Indirect Costs	\$0.00	\$0.00
k) TOTALS (sum of i + j)	<b>\$11,500.00</b>	<b>\$0.00</b>



The Center for Environmental and Regulatory Information Systems does not certify the accuracy or completeness of the map.  
Negative data spans over last 3 years only.

### **IX) BENEFITS AND RESULTS OF SURVEY:**

In March 2005, to ensure the absence of sudden oak death (SOD) in Indiana nursery stock, the Purdue Plant and Pest Diagnostic Laboratory (P&PDL) partnered with the IDNR to participate in a National SOD survey funded by USDA/APHIS to scout for the presence of *P. ramorum* in nursery stock. In Indiana, 22 nurseries were inspected for SOD. A total of 801 symptomatic samples were collected by IDNR inspectors and USDA APHIS PPQ officers and submitted to the P&PDL for testing. One hundred and eighty-eight of those samples tested positive for a *Phytophthora* species in a preliminary analysis (the test is not specific for *P. ramorum*). Those positive samples were sent to the USDA-APHIS Plant Pest Quarantine (PPQ) Laboratory in Beltsville, Md., for conclusive speciation testing. All subsequent tests were negative. Forty-six Trace Forward samples were also collected and tested negative.

All survey data from each survey were entered into the NAPIS database. First records for the State and/or County were entered **within 48** hours of confirmation of identification by a qualified identifier. All other required records, both positive and negative, were entered **within two weeks** of confirmation. All records were entered into the NAPIS database by **December 1** of the year of the survey, so these data are included in the yearly Plant Board Report.



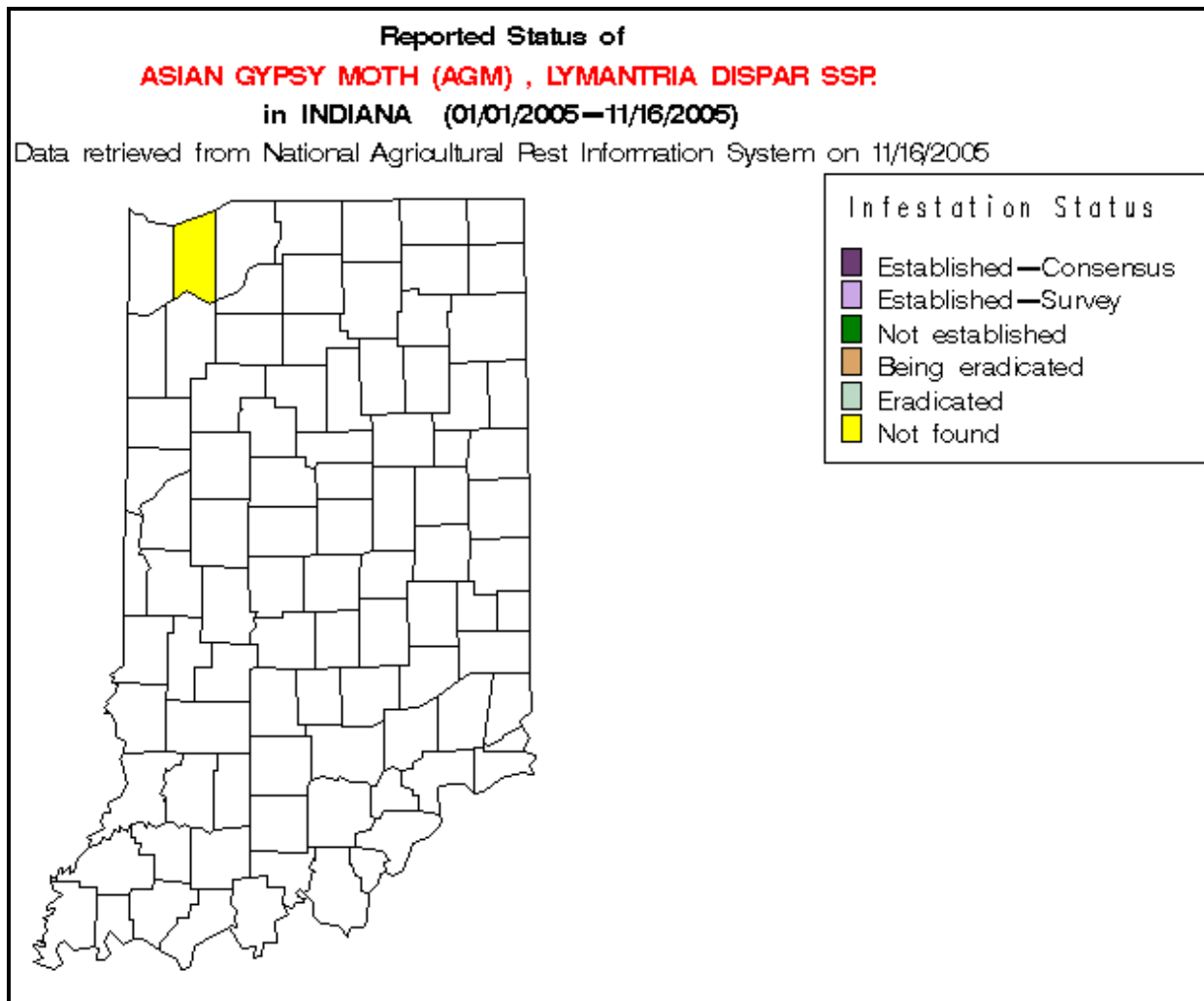
# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

## Additional Indiana State Survey Activities – 2005

### 2005 Indiana Asian Gypsy Moth Survey

United State Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ)

The Indiana Asian Gypsy Moth survey program will provide early detection of Asian Gypsy Moth introductions resulting from the international movement of ships and cargo. Ten milk carton traps were placed in Porter County at the Port of Indiana (Burns Harbor). Traps were placed on June 30, 2005 and checked on a bi-weekly basis. Traps were removed on September 9 of 2005. No specimens were detected during the course of this survey.



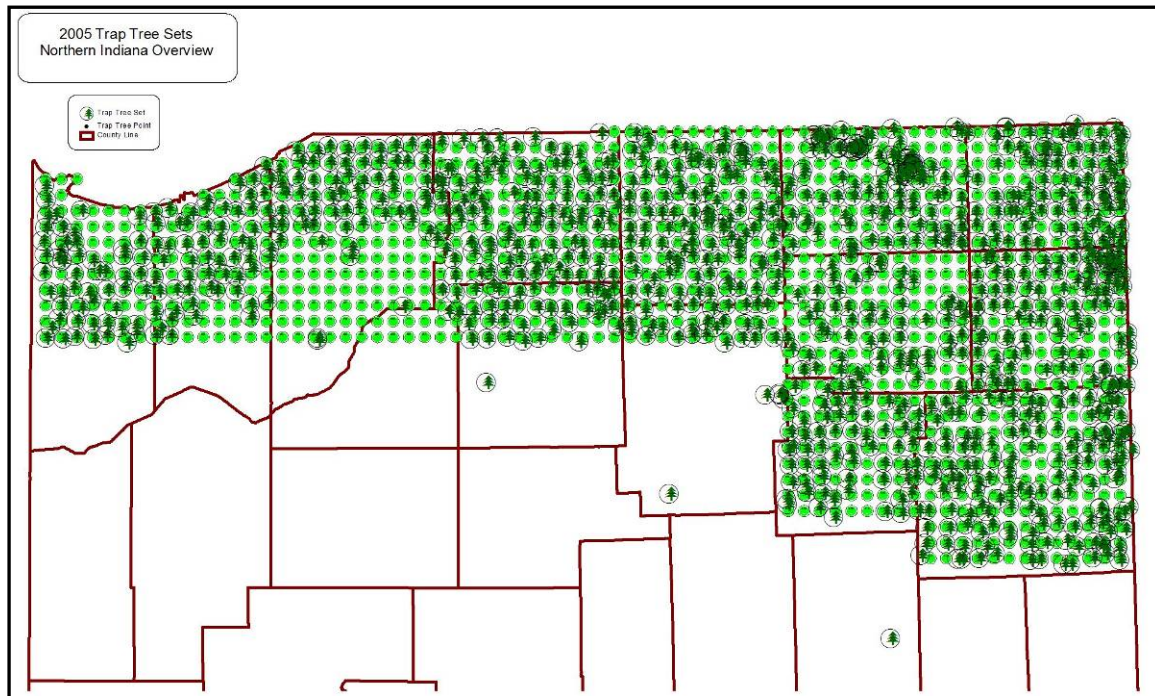


## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

### 2005 Indiana Emerald Ash Borer Survey

**Indiana Department of Natural Resources,  
Division of Forestry & Division of Entomology & Plant Pathology  
United State Department of Agriculture (USDA), Animal and Plant Health Inspection  
Service (APHIS), Plant Protection and Quarantine (PPQ)  
United States Department of Agriculture, Forest Service, State & Private Forestry - Forest  
Health**

In 2005, trap trees were placed on a 2-mile grid in 15 counties in northern Indiana (see map below). Those counties include Lake, Porter, LaPorte, St. Joseph, Elkhart, LaGrange, Nobel, Whitley, Steuben, DeKalb, Allen, Randolph, northern Starke, northern Marshall, and northern Kosciusko. One thousand, three hundred trap trees were designated in April and set during May through Mid-June. Inspection of the trap trees began the third week in September and ended on October 31, 2005. Of the 1,300 proposed trap trees, 1,056 trees were set and examined. In Indiana, the first adult emerald ash borer of the season was found emerging from a log in Shipshewana on May 11, 2005. This emergence came about a week and a half earlier than occurred in 2004.



A state-wide visual survey for emerald ash borer in Indiana was also conducted in 2005. Sites surveyed included 860 campgrounds, 386 nurseries (grower), 807 nurseries (retailers), 186 saw mills, and 119 organic dumps.

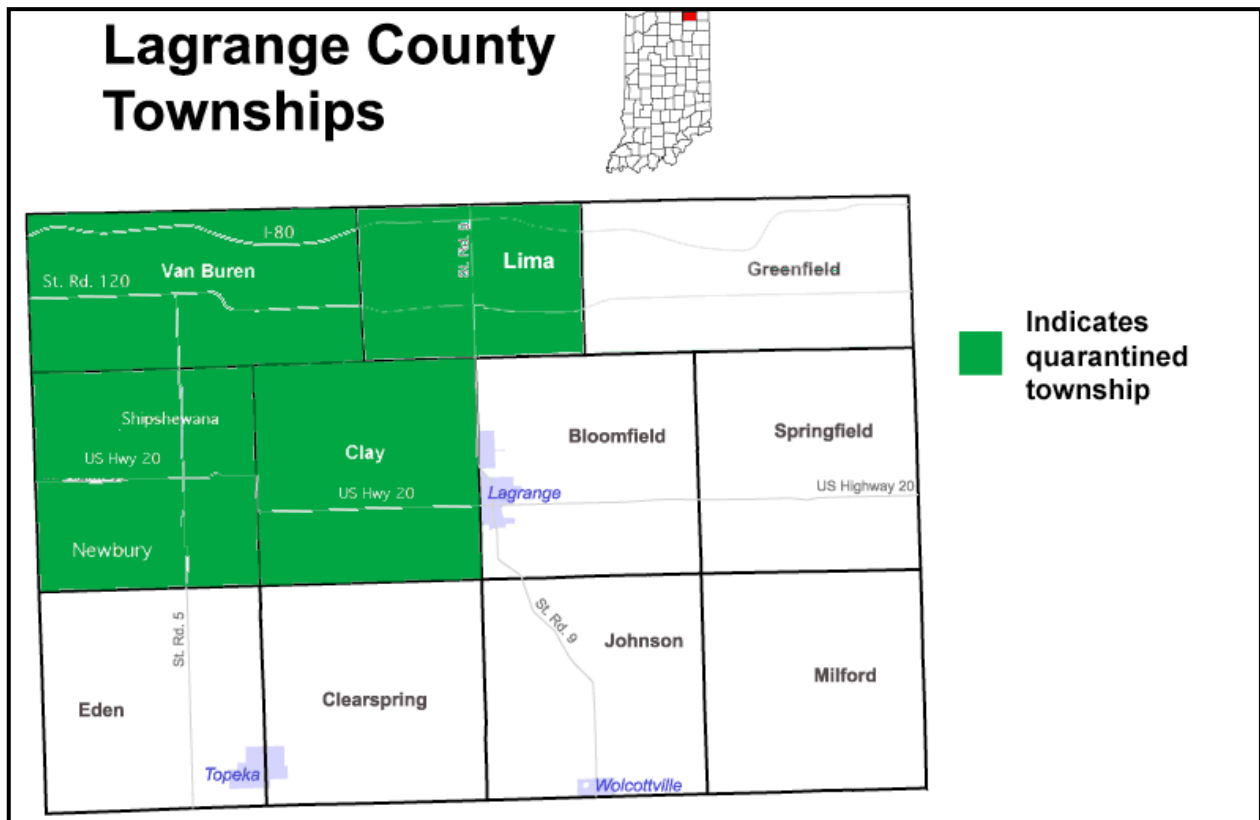


# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

## New finds of emerald ash borer in LaGrange County, Indiana

An EAB-positive site was reported in Clay Township in LaGrange County, approximately 1-1.5 miles north of the Clearspring Township line.

A new positive site was discovered 1 mile north of the town of Scott, north of the Pigeon River. The positive trap tree was heavily infested. There are also standing dead ash trees in the area. This site is in Van Buren Township, approximately 4 miles from the Shipshewana regulatory cuts last year, placing it solidly within the Pigeon River riparian corridor. DNR properties within the riparian corridor may now want to begin to eliminate ash in sensitive areas and in general throughout the properties.

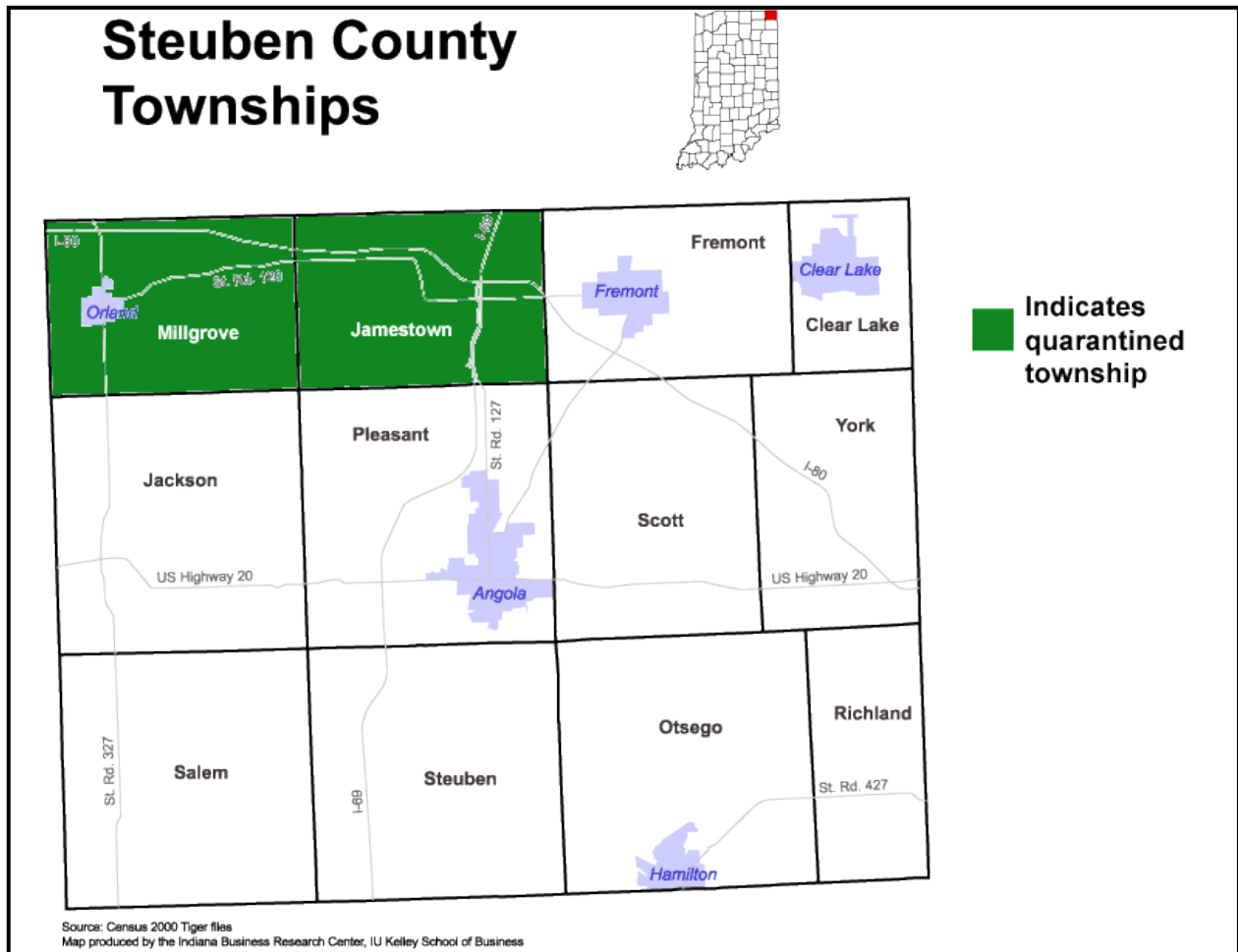




# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

## New find of emerald ash borer in Steuben County, Indiana

Emerald ash borer was detected in a trap tree in Steuben County, near the southeast corner of Lake George in Steuben County, ½ mile from the Michigan line.





## 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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### **Emerald ash borer found in Adams County Indiana**

#### ***Ash quarantine issued for Root and Washington townships***

Emerald ash borer was confirmed at a location in Adams County on October 12, 2005. As a result of the confirmed discovery, the DNR issued a quarantined Root and Washington townships.

The Decatur, IN city forester reported finding emerald ash borer larvae and an adult on an ash tree to the DNR. Samples were confirmed by the U. S. Department of Agriculture. The Decatur site is approximately nine miles west of the Ohio border and 20 miles south of Fort Wayne.

At the Decatur site, DNR personnel are conducting a delimiting survey around the new find. To date, live larvae have been removed from 19 of the 77 trees involved in the delimiting survey.

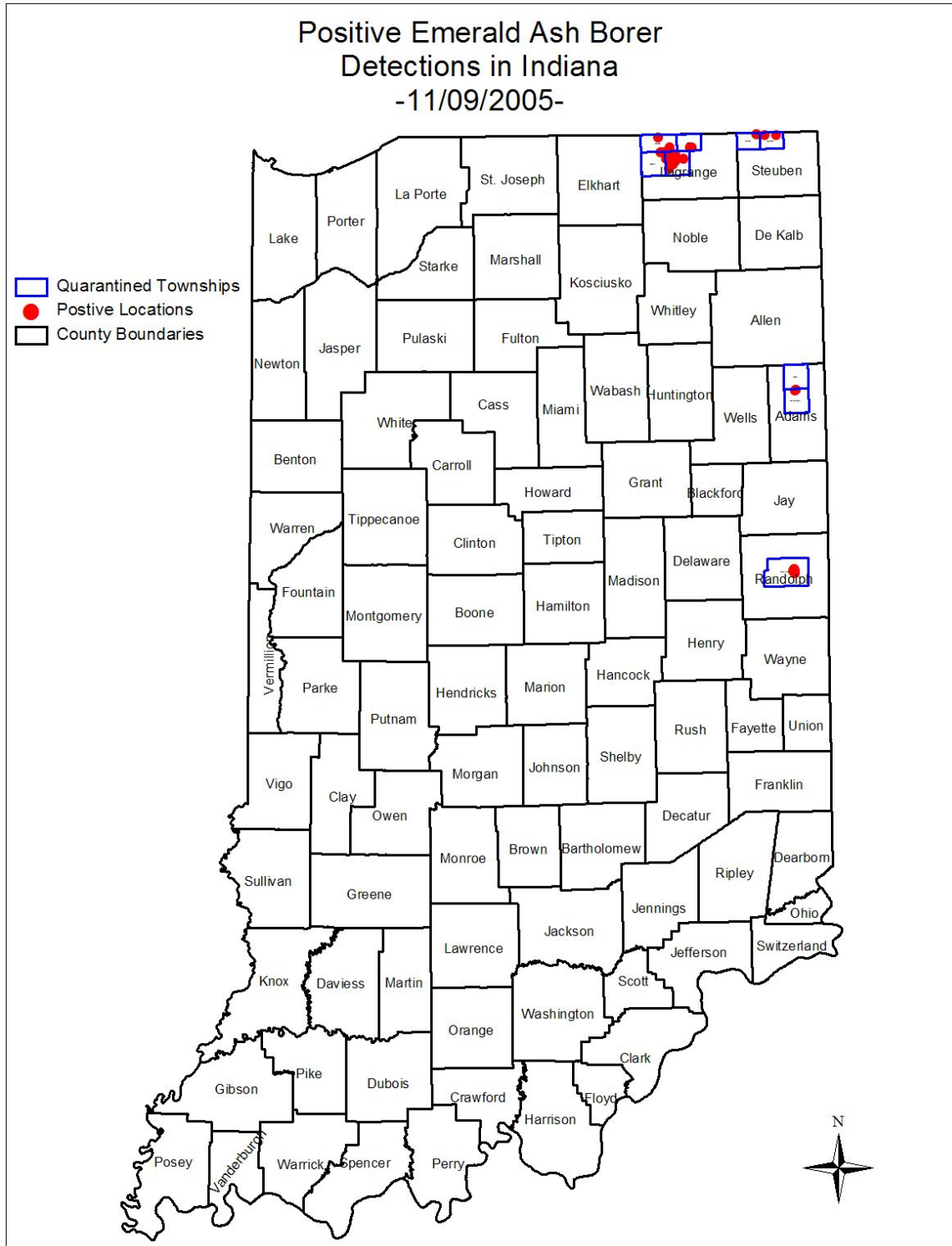
### **Emerald ash borer found in Randolph County, Indiana**

The emerald ash borer was confirmed at a location in Randolph County on November 11, 2005, resulting in the quarantine of White River Township.

The U.S. Department of Agriculture confirmed that larvae have been discovered in about 7 trees that follow a small drainage ditch a half-mile from a site where Michigan nursery stock was introduced several years ago although another source in the area is possible. The site includes the town of Winchester. Indiana DNR personnel and others are conducting a delimiting survey of the area around the new find. To date, of the 40 trap trees in Randolph County, larvae have been found in 10 trees.



# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana







# 2005 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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## 2005 Indiana European Gypsy Moth Survey

**Indiana Department of Natural Resources,  
Division of Forestry & Division of Entomology & Plant Pathology  
United State Department of Agriculture (USDA), Animal and Plant Health Inspection  
Service (APHIS), Plant Protection and Quarantine (PPQ)  
United States Department of Agriculture, Forest Service, State & Private Forestry - Forest  
Health**

The 2005 Cooperative Gypsy Moth Survey completed its eighteenth year of statewide surveys. These surveys are part of the Slow-The-Spread (STS) Program and incorporate the STS protocol for their design and operations. Under this protocol, Indiana is divided into three zones - the STS Evaluation Zone, the STS Action Zone, and the State Area (Figure 1). The survey design uses fixed 3K, fixed 2K, and rotating 3K grids, respectively, for the three zones. Across all zones, the survey set 13,231 detection and 3,127 intensive traps, all referenced by GPS. The survey detected 18,222 moths from 44 counties ranging from 1 to 4,323 moths per county (Figure 2). This is an increase from 2004's total moth catch of 9,034 and falls between the catch totals for 2002 and 2003 (15,569 & 23,090 respectively).

The results of the 2005 survey found that the majority of the moth catch came in the Action Zone (Table 1). The Evaluation Zone, which includes the quarantined counties of Steuben, LaGrange, Elkhart, Noble, Allen, and DeKalb, detected 32.8% of the moths (5,980 of 18,222). The northern third of the state falls in the Action Zone, which is below the Evaluation Zone under STS protocol. The Action Zone detected 51.0% of the moth catch (9,290 of 18,222). The majority of the moth catch in this zone is located in the eastern part of the state adjacent to the Evaluation Zone. The State Area detected 16.2% of the moths (2,953 of 18,222). The Scott County site comprised of an intensive delimit around a known population inflated the State Zone moth capture from its historic low levels (15.5% of the moths; 2,830 of 18,222). All positive traps in the state zone are delimited the following year.

Treatments to eradicate and to slow-the-spread and development of gypsy moth were conducted on 33 sites in 11 counties in 2005 (Table 2). Fifteen sites totaling 8,231 acres were treated with *Btk* at 30 BIU/acre/application. Eleven sites were treated with two applications of *Btk* (6,415 acres). Four sites treated with one *Btk* application (1,816 acres). Nine sites were ground treated with one application of *Btk* at 30 BIU's. Five sites totaling 4,406 acres and four sites totaling 10,517 acres received one application of pheromone flakes for mating disruption at 6 and 15 grams, respectively, in June. Delimit surveys to monitor treatment success found one *Btk* site failed (Arcola) and three had only partial success (Bremen South, Cobb's Corner and Leesburg). This was most likely due to small block sizes and timing of treatments (ground treatments were performed later in the season). These sites have been reevaluated and proposed for treatment next year.

The aerial survey of the five northeastern counties in the Evaluation Zone and the other counties with treatment sites in the Action Zone did not detect defoliation. Some defoliation observed from the ground was observed in Scott County where a sizable population of moths was found. This site has been proposed for eradication treatment in 2006.

The moth lines (Figure 3) projected for 2005 have remained fairly static across the state with no

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significant change from the moth lines of 2003 and 2004. The survey and program to manage gypsy moth in Indiana continues to compress the distance between moth lines, thus slowing the spread of gypsy moth in Indiana. Since the survey began in 1972 268,994 moths have been caught in 90 of the 92 counties. No new county records were set this year.

Table 1: Number of male gypsy moths caught in three survey areas from 2003 to 2005.

Year	STS Evaluation Area	STS Action Area	State Area	Total
2005	5,980	9,290	2,953	18,222
2004	3,887	5,108	19	9,014
2003	14,607	8,425	58	23,090

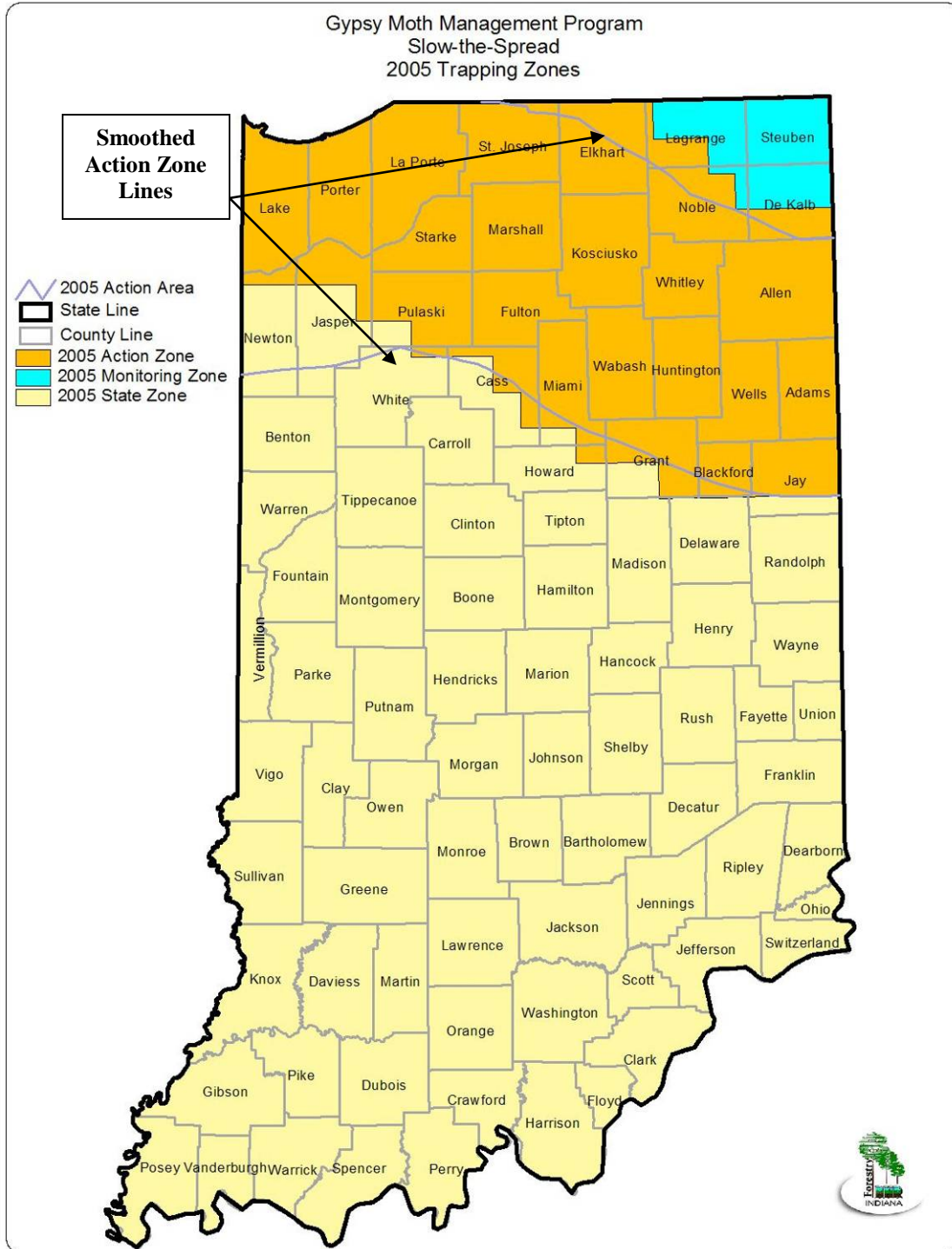
Table 2: Gypsy moth treatment site for 2005 by county and treatment method.

COUNTY	PROPOSED SITES	TREATMENT ACRES		COUNTY	PROPOSED SITES	TREATMENT ACRES		
		by Treatment Method				by Treatment Method		
		Btk	Mating disruption			Btk	Mating disruption	
Allen	Arcola	Ground		La Porte	300 E		3539	
	Cedarville	870			50 W		303	
	Devall & County Line	912			Lake Shore & Ridgemoore		213	
	Fort Wayne East	2889			Northbrook 05		975	
	Leesburg Road	Ground			Prison		185	
	Sheriff's Dept	96			LaGrange	Topeka	486	
De Kalb	CR 60 & CR 51	519		Noble	300 South 05	228		
	CR 64 & CR 51	253			Ligonier	Ground		
	De Kalb Co Airport		1155		Merriam 05	364		
	Saint Joe & Spencerville		4842	Porter	Cobbs Corner	69		
Elkhart	Bristol	132		St. Joseph	Bendix County Park		981	
	Elcona C. C.	792			Bremen North	Ground		
	Middlebury CR 37	Ground			Brick Rd & Auten	406		
	Millersburg	Ground			Ironwood		2730	
Kosciusko	Pierceton 05	147		Whitley	300 S & 650 E	Ground		
	SR 15 & 900 North	Ground			Lincoln Way	68		
Marshall	Bremen South	Ground		Totals by Treatments		8,231	14,923	
						Totals by All Treatments		23,154



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Figure 1: STS Action Zones for 2005

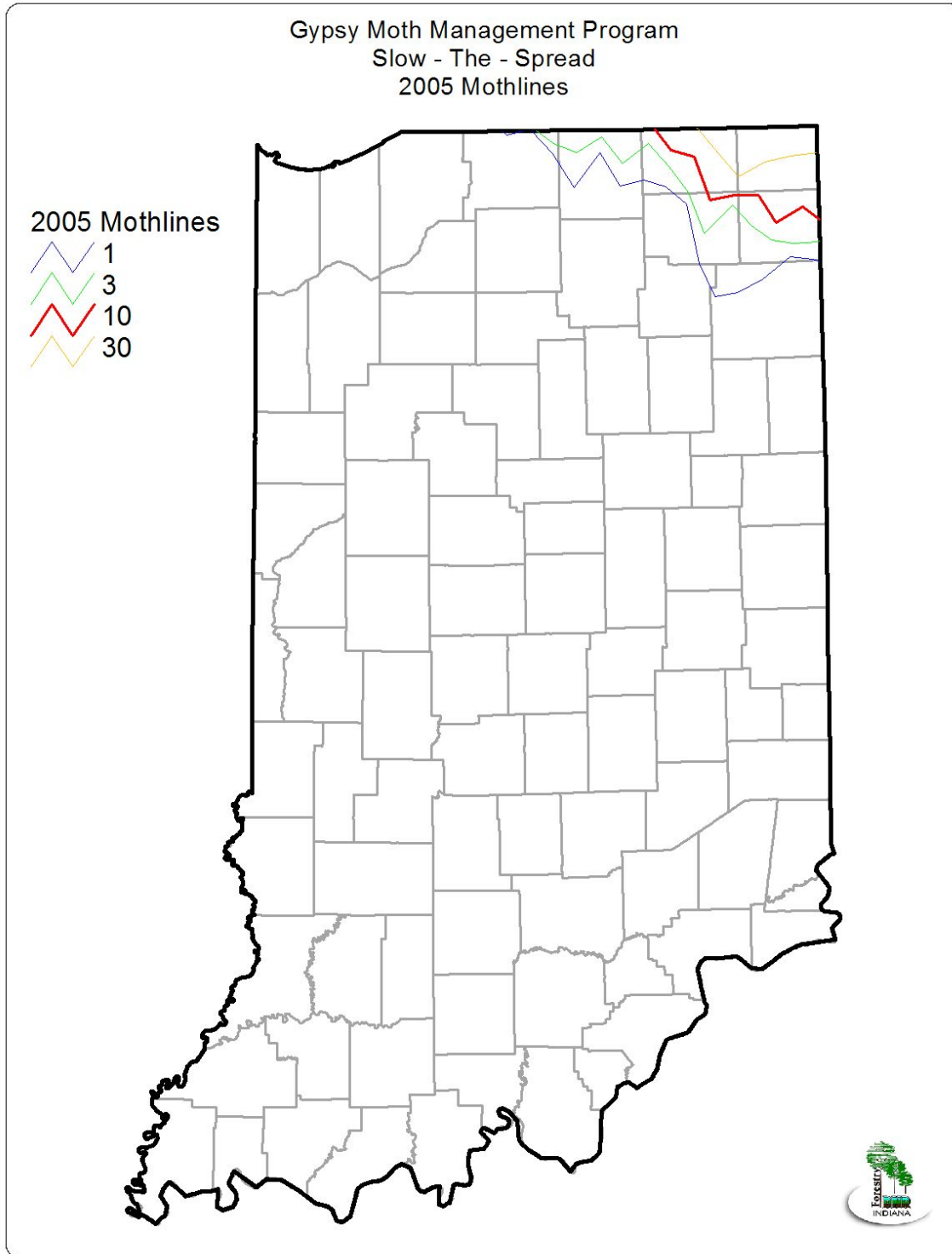






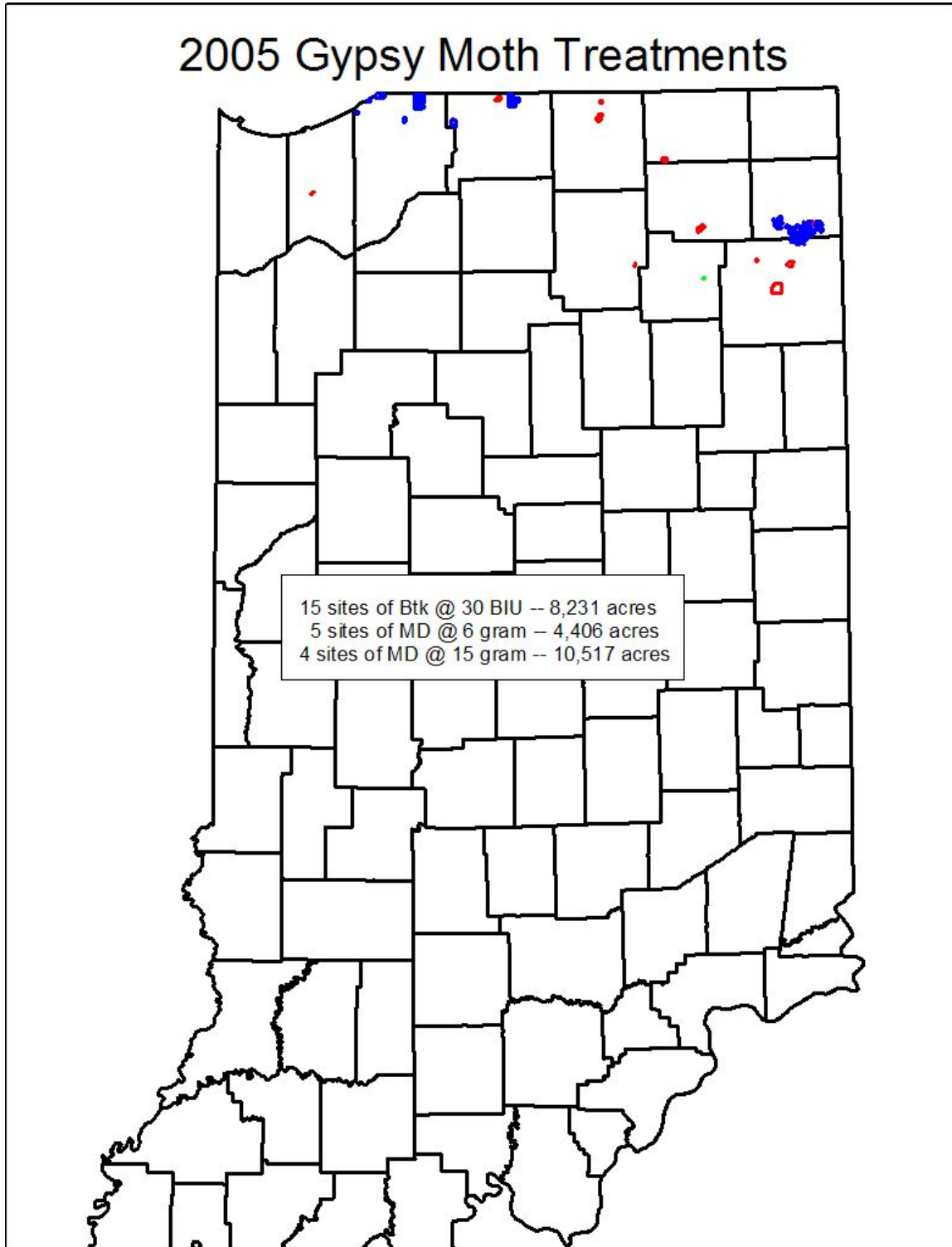
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Figure 3: 2005 smoothed moth lines.





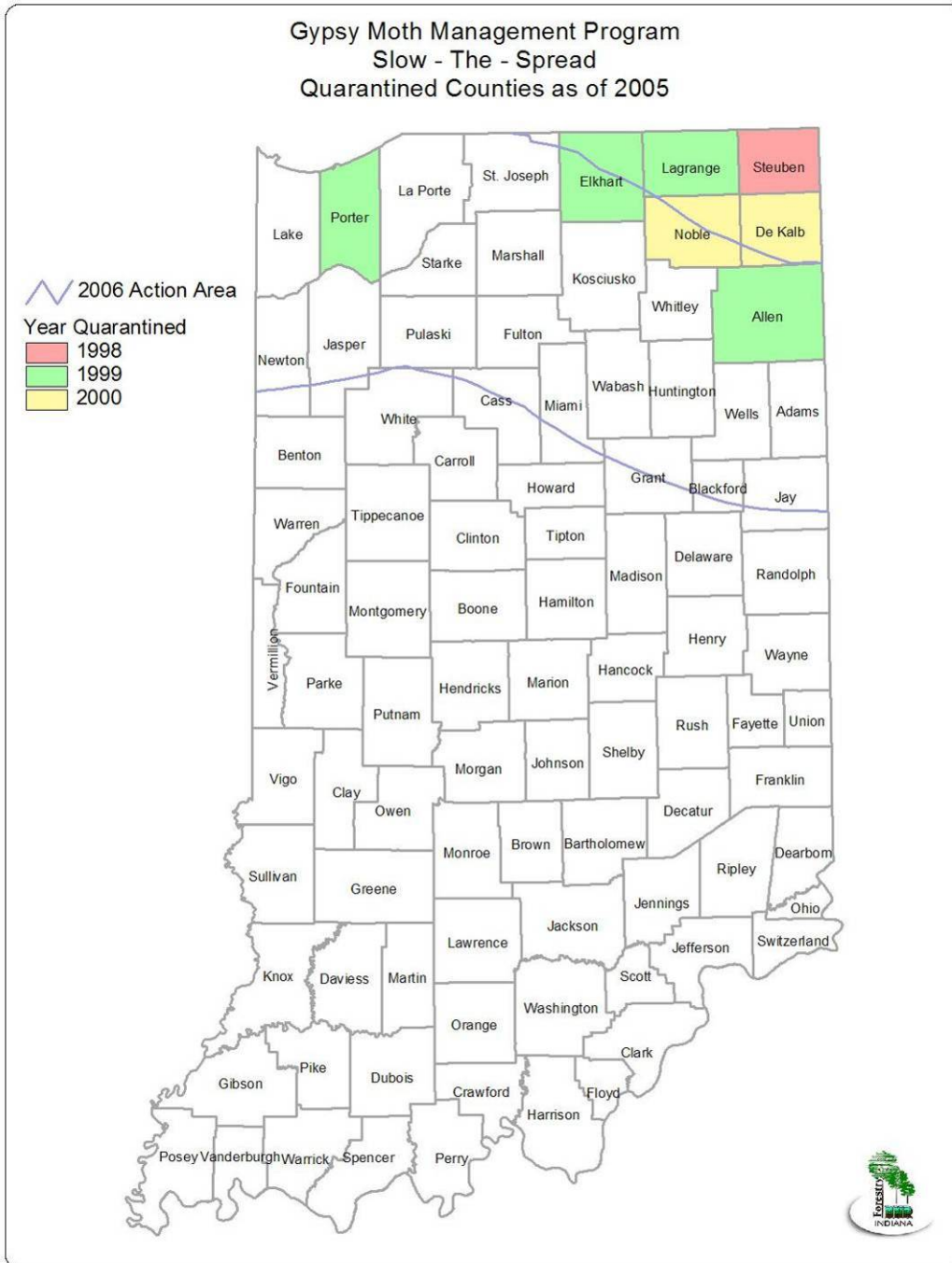
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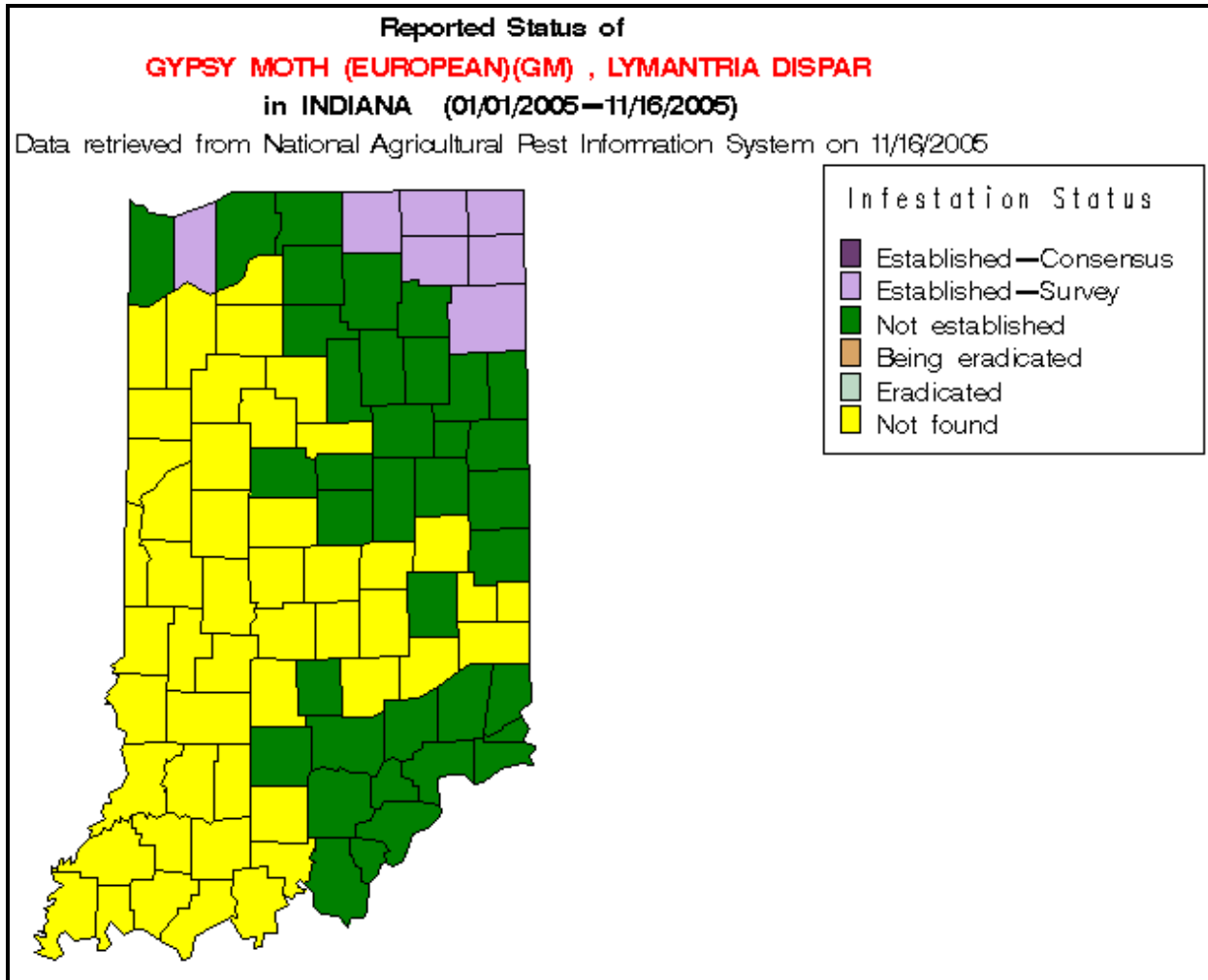
## Current quarantined counties



**No new counties in Indiana were quarantined in 2005.**



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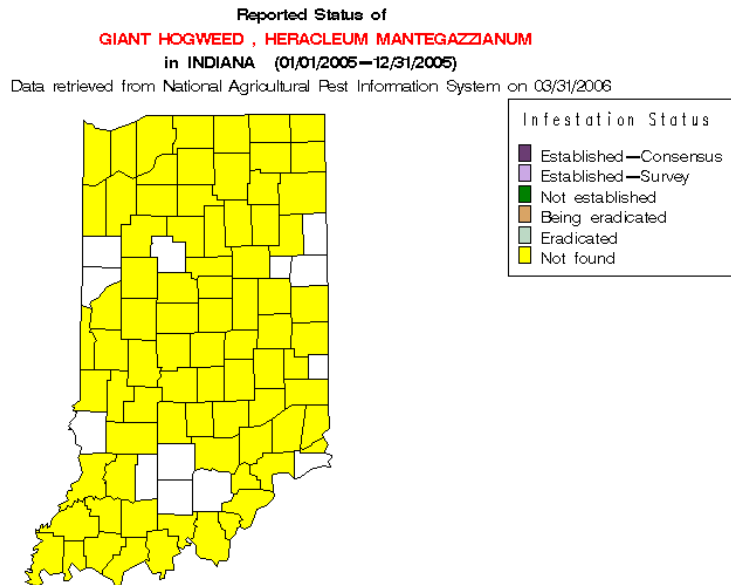


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## Indiana Department of Natural Resources, Division of Nature Preserves

In Late June 2005, Indiana DNR - Div. of Nature Preserves surveyed for giant hogweed in Indiana. Indiana Department of Natural Resources – Division of Nature Preserves confirmed the first location for giant hogweed, *Heracleum mantegazzianum*, in Indiana. This invasive plant is a high priority for detection and control due both to its threat to human health and because we still have the chance to prevent it becoming established in the state.

In 2004, a confirmed site was reported by a botanist from JF New at a site near Warsaw in NE Indiana. There were both first year seedlings and blooming plants at the site, so this is at least the second year it's been there. Indiana DNR - Div. of Nature Preserves believe the next nearest location for this species is NE Ohio, so this represents a pretty large leap for the plant and raises the possibility that it has managed to leap to other spots within the state or the Midwest. Giant hogweed was not detected in surveys in Indiana in 2005.



The Center for Environmental and Regulatory Information Systems does not certify the accuracy or completeness of the map.  
Negative data spans over last 3 years only.



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## **2005 Indiana Karnal Bunt of Wheat Survey**

### **United State Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ)**

In 2005, the karnal bunt of wheat survey was conducted by USDA APHIS PPQ and was responsible for drawing and submitting samples according to USDA guidelines. Three samples collected resulted in negative findings of karnal bunt of wheat in Indiana. Samples represented grain from 20 different counties in Indiana which include: Bartholomew, Clay, Daviess, Decatur, Dubois, Gibson, Greene, Harrison, Jackson, Jefferson, Jennings, Knox, Pike, Posey, Ripley, Spencer, Sullivan, Vanderburgh, Warrick, and Washington.

## **2005 Indiana Kudzu**

### **Indiana Department of Natural Resources, Division of Forestry & Division of Entomology & Plant Pathology**

Indiana Department of Natural Resources also conducted a survey for kudzu. In Indiana there are 96 sites, in 34 counties, totaling 97.24 acres. Kudzu grows well under a wide range of conditions and in most soil types and is important due to its ability to act as an alternate host for soybean rust.

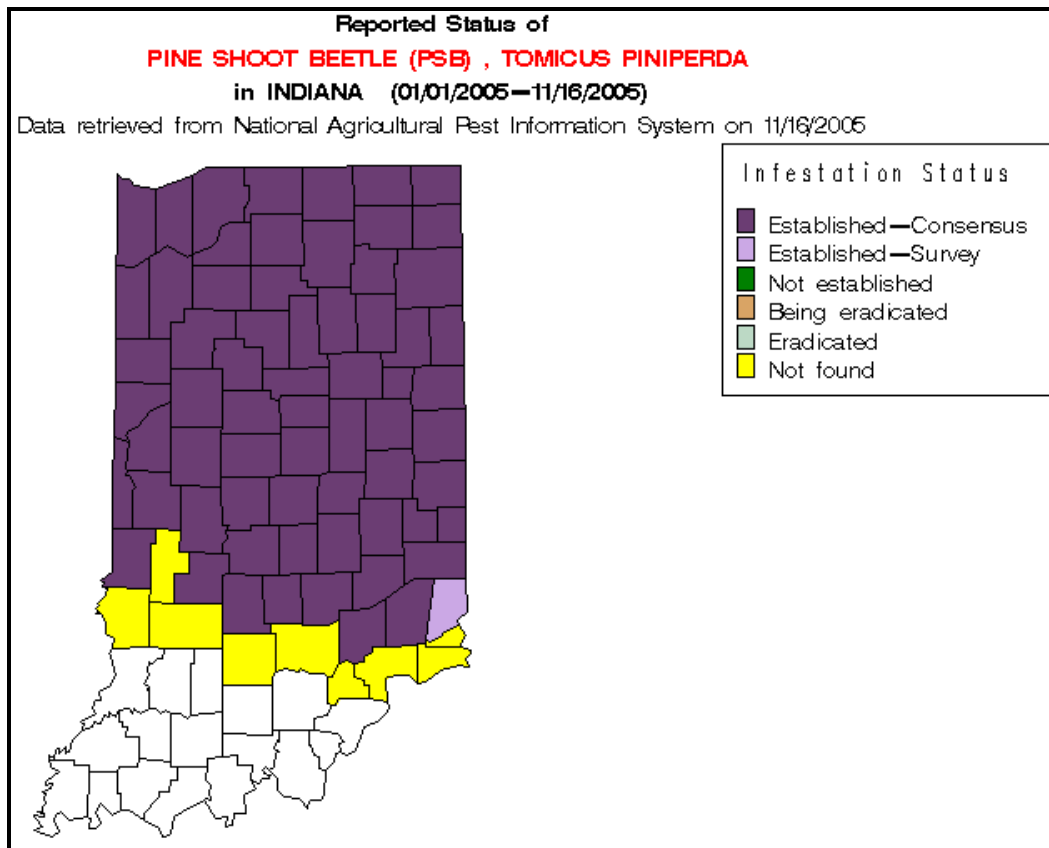


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## 2005 Indiana Pine Shoot Beetle Survey

### United State Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ)

A total of 80 pine shoot beetle (*Tomicus piniperda* (Linnaeus)) delimiting traps were set in Indiana in 2005. On January 14, 2005, USDA APHIS PPQ officers set 80 delimiting traps (Lindgren funnel traps) baited with Alpha pinene in 10 southern counties in Indiana (8 traps per county). Those counties were Clay, Dearborn, Greene, Jackson, Jefferson, Lawrence, Ohio, Scott, Sullivan, and Switzerland. The traps were placed in locations with high concentrations of host material and checked on a bi-weekly basis. Pine shoot beetle traps were removed in early April. Pine shoot beetle was confirmed on May 20, 2005 in Dearborn County, Indiana. Dearborn County was regulated for pine shoot beetle because of a single beetle catch trapped at a private residence.





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## 2005 Indiana Siricid Trap Design Study

**Indiana Department of Natural Resources,  
Division of Forestry & Division of Entomology & Plant Pathology  
United States Department of Agriculture, Forest Service, State & Private Forestry - Forest Health**

Previous research conducted in Indiana on trapping siricids with herbicide treated trap trees and trap logs indicates that careful selection of trap material is necessary to ensure trap efficiency. Trap material must be prepared or harvested in an area that does not have high bark beetle populations. Native bark beetles may preclude some siricid species from laying eggs in trap materials, thus skewing the results of a survey. During 2004, carefully selected red pine trap trees yielded 41 siricids after rearing was completed in November 2005. However, placement of trap logs and trap trees and rearing of larvae are very labor intensive and sometimes inefficient. Entomologists in New York State captured *Sirex noctilio* adults during the summer of 2004 using Lindgren funnel traps baited with cis-verbrenol, alpha pinene, idienol and methyl butanol. The results of the aforementioned surveys indicated that there is a need for developing a simple and effective means of trapping siricids, especially the destructive pest, *Sirex noctilio*,

Traps were placed in several areas of the country to conduct this study. In the state of Indiana, traps were placed in the eastern part of Yellowwood Forest in Brown County on June 30, 2005. Three trap types were used including Lindgren funnel traps, panel intercept traps and Sante canopy traps. Traps were placed in the forest in a randomized design. The site was chosen in an area with declining *Pinus resinosa* but also with little bark beetle activity. Each group of traps was 100 yards apart and individual traps within a group were at least 75 feet apart. The bottoms of individual traps were kept 3 feet off of the ground. Traps were baited with one turpentine and one ethanol sleeve lure with a semi-permeable membrane. Lures were changed every 4 weeks regardless of the liquid level in the sleeve. The canisters on the traps were filled with approximately 3 inches of biosafe antifreeze. Samples were collected from traps every 2 weeks until October 3, 2005. Samples were taken to the lab, cleaned and placed in 70% ethanol solution for further identification. All siricids were sent to the US Forest Service in Stoneville, MS for identification.

Only three native siricids were captured with the traps. They were collected during the final sampling date on October 3, 2005 which indicates that adult flight of this species occurred during the last two weeks of September. Two of the samples were captured in panel intercept traps and one of the samples was collected from the top portion of the Sante canopy trap. The samples were identified as *Urocerus cressoni* and sent to the US Forest Service for PCR analysis. Numerous other weevils, cerambycids and a few scolytids were caught in the traps. All samples were sent to Purdue University for identification.

Results from the Indiana portion of the experiment indicate that trapping native siricids is very difficult. This may be due to the fact that native siricids typically have low population numbers compared to other native insects such as scolytids. Results from 2003 surveys conducted in the Bloomington area indicated that trap logs and trap trees were not effective at capturing siricids due to the presence of high populations of pine bark beetles and pine sawyers. However, in October of 2005, 41 siricids were reared from trap trees that were prepared in the Morgan-Monroe Forest in Monroe County, Indiana. This may indicate that trap trees can be useful if trap material is carefully selected. Research involving EAG of *Sirex noctilio*

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adults is being conducted at Penn State University to determine which lure elicits the most positive response from the insect. This information along with the information from the trapping study conducted here in the US will be utilized for additional trap studies to be conducted in Brazil where populations of *Sirex noctilio* are established.

