The 2006 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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2006 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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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
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Ellen Jacquart	The Nature Conservancy and IPSAWG	Plant Ecology/ Identification
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Jim Pheasant	CERIS	NAPIS
Gail Ruhl	Purdue University	Plant Disease Diagnostics
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January Accomplishments:

- In January, I began to purchase supplies for the upcoming FY 2006 surveys.
- In January, I began compiling information and writing the FY 2006 Annual Accomplishment Report.
- I continued to work on the development of the Indiana CAPS website.
- In conjunction with Dr. Robert Waltz (IDNR), Dr. Tim Gibb (Purdue Entomology) and myself, we began producing an article for the Indiana Academy of Science titled: An overview of arthropod activity in Indiana during 2005.
- I was invited to give a presentation to the Indiana Arborist Association Annual Conference and gave a talk titled: Exotic Invaders in the U.S. Indiana.
- I continued to process and assimilate native bark and longhorned beetle samples from the exotic bark and longhorned beetle survey.

Month	Date	Task
January	Wednesday, 26th	Professional Landscape Management School, Evansville, Indiana

February Accomplishments:

- I began to purchase supplies and contacting sites to participate in the upcoming FY 2006 SWPM survey.
- I continued to compile information and write the FY 2005 Annual Accomplishment Report.
- I continued to work on the development of the Indiana CAPS website.
- I attended meetings for the Invasive Plant Species Assessment Working Group and the Indiana Exotic Forest Pests Advisory Committee in Indianapolis, Indiana.
- I continued working with Dr. Robert Waltz (IDNR), Dr. Tim Gibb (Purdue Entomology) and myself, in producing an article for the Indiana Academy of Science titled: An overview of arthropod activity in Indiana during 2005.
- I continued, with the help of my intern, to develop more taxonomic information, keys, and reference materials for individuals participating in the SWPM survey as well as the Indiana Department of Natural Resources Nursery Inspectors.
- I continued to process and assimilate native bark and longhorned beetle samples from the exotic bark and longhorned beetle survey.

Month	Date	Task
February	Tuesday, 8th	IPSAWG (Invasive Plant Species Assessment Working Group) Meeting (9:00-12:00) at the NRCS office in Indianapolis, Indiana.
	Friday, 11th	Indiana Exotic Forest Pests Advisory Committee Meeting (1:00-4:00 PM) at the Forestry Conference Center at the Indiana Government Center in Indianapolis, Indiana.

March Accomplishments:

- I submitted the FY 2005 Indiana CAPS Annual Accomplishment Report.
- I continued to work on the development of the Indiana CAPS website.
- I continued, with the help of my intern, to develop more taxonomic information, keys, and reference materials for individuals participating in the SWPM survey as well as the Indiana Department of Natural Resources Nursery Inspectors and USDA APHIS PPQ Officers.
- I continued working with Dr. Robert Waltz (IDNR), Dr. Tim Gibb (Purdue Entomology) and myself, in producing an article for the Indiana Academy of Science titled: An overview of arthropod activity in Indiana during 2005.
- I took part in ISIS (Integrated Survey Information System) Training. United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Plant Protection and Quarantine (PPQ). Valparaiso, Indiana.
- I was a Symposium Organizer for the Annual Meeting of the North Central Branch of the Entomological Society of America in Bloomington, Illinois. F. Miller, and **C. M. F. Pierce.** 2006. What you need to know and how to prepare for these new nemeses of our natural resources in North America. Annual Meeting of the North Central Branch of the Entomological Society of America. Bloomington, Illinois.
- I served as a moderator, Sections: A, B, Ca, Cb, Cc, Cd, Cf, and D. Annual Meeting of the North Central Branch of the Entomological Society of America. Bloomington, Illinois. March 2006.
- I presented with Venette, R. C., and **C. M. F. Pierce.** 2006. Future invasive forest pests of concern for the North Central Branch. Annual Meeting of the North Central Branch of the Entomological Society of America. Bloomington, Illinois.
- We released the Indiana Cooperative Agricultural Pest Survey: Purdue University Extension Entomology. http://www.entm.purdue.edu/CAPS/

Month	Date	Task
March	Tuesday, 14th	ISIS (Integrated Survey Information System) Training
	Sunday, 26th	ESA NCB Meeting, Bloomington, Illinois
	Monday, 27th	ESA NCB Meeting, Bloomington, Illinois
	Tuesday, 28th	ESA NCB Meeting, Bloomington, Illinois
	Wednesday, 29th	ESA NCB Meeting, Bloomington, Illinois
	Thursday, 30th	ER CAPS Committee Conference Call: Sirex survey

April Accomplishments:

- I continued to work and update information on the Indiana CAPS website.
- I deployed and began to sort through, and identify samples from the SWPM survey.
- I continued, with the help of my intern, to develop more taxonomic information, keys, and reference materials for individuals participating in the SWPM survey as well as the Indiana Department of Natural Resources Nursery Inspectors and USDA APHIS PPQ Officers.
- I continued working with Dr. Robert Waltz (IDNR), Dr. Tim Gibb (Purdue Entomology) and myself, in producing an article for the Indiana Academy of Science titled: An overview of arthropod activity in Indiana during 2005.
- I coordinated and lead the Indiana CAPS State Survey Committee Meeting (9:00-11:30 AM), 116 WSLR at Purdue University.
- I attended the Indiana Exotic Forest Pests Advisory Committee Meeting (1:00-4:00 PM) at the Forestry Conference Center at the Indiana Government Center in Indianapolis, Indiana.
- I gave a presentation with James Pheasant to IPSAWG titled: Invasive plant species data in Indiana: The role of the Indiana CAPS program and the NAPIS database. Invasive Plant Species Assessment Working Group Meeting in Butlerville, Indiana.
- I contacted Dr. Amanda Hodges, SPDN Entomology Coordinator about Purdue University hosting a Coleoptera Workshop: Specialized Taxonomic Training for Entomologist (SWPM) in the Central Plant Board (North East and North Central U.S.). We agreed to continue discussions about this project and will talk later in the fall semester.

Month	Date	Task
April	Tuesday, 4th	Deployed and set SWPM traps
	Wednesday, 5th	Deployed and set SWPM traps
	Thursday, 6th	Deployed and set SWPM traps
	Friday, 7th	Deployed and set SWPM traps
April	Thursday, 13th	Indiana CAPS State Survey Committee Meeting (116 WSLR) 9:00 – 11:30 AM
	Thursday, 14th	Indiana Exotic Forest Pests Advisory Committee Meeting (1:00-4:00 PM) at the Forestry Conference Center at the Indiana Government Center in Indianapolis, Indiana.
April	Monday, 17th	ER CAPS Committee Conference Call
	Tuesday, 18th	Surveyed SWPM traps
	Wednesday, 19th	Surveyed SWPM traps
	Thursday, 20th	Surveyed SWPM traps

May Accomplishments:

- I continued to work and update information on the Indiana CAPS website.
- I continued to survey, sort through, and identify samples from the SWPM survey.
- I continued, with the help of my intern, to develop more taxonomic information, keys, and reference materials for individuals participating in the SWPM survey as well as the Indiana Department of Natural Resources Nursery Inspectors and USDA APHIS PPQ Officers.
- I continued working with Dr. Robert Waltz (IDNR), Dr. Tim Gibb (Purdue Entomology) and myself, in producing an article for the Indiana Academy of Science titled: An overview of arthropod activity in Indiana during 2005.
- I gave a presentation to the Hamilton County Parks Department titled: Emerald ash borer in Indiana: Here to stay in Carmel, Indiana.
- I organized a monthly teleconference for the Central Plant Board SSC's to discuss and update each other on what was going on in our individual

Month	Date	Task
May	Tuesday, 2nd	ER CAPS (Central Plant Board) State Survey Coordinators Tele-conference (10:00 AM)
	Wednesday, 3rd	Surveyed SWPM traps
	Thursday, 4th	Surveyed SWPM traps
May	Wednesday, 10th	Invasive Plant Species Assessment Working Group (IPSAWG) Meeting
May	Monday, 15th	ER CAPS Committee CAPS conference call: 10:30 AM EST.
	Tuesday, 16th	Surveyed SWPM traps
	Wednesday, 17th	Surveyed SWPM traps
May	Wednesday, 24th	State Fair Meeting (Indianapolis, DNR Forestry Conference Room: 1:00 - 4:00 PM)
May	Tuesday, 30th	Surveyed SWPM traps
	Wednesday, 31st	Surveyed SWPM traps

June Accomplishments:

- I coordinated and lead the Indiana CAPS State Survey Committee Meeting on June 6th, (9:00-12:00am), 104 Smith Hall at Purdue University.
- I began working on the Semi-Annual Report for FY 2006.
- I continued to work and update the Indiana CAPS website.
- I continued working with Dr. Robert Waltz (IDNR), Dr. Tim Gibb (Purdue Entomology) and myself, in producing an article for the Indiana Academy of Science titled: An overview of arthropod activity in Indiana during 2005.
- I continued to survey, sort through, and identify samples from the SWPM survey.
- I continued, with the help of my intern, to develop more taxonomic information, keys, and reference materials for individuals participating in the SWPM survey as well as the Indiana Department of Natural Resources Nursery Inspectors and USDA APHIS PPQ Officers.
- I am serving on the Program Committee for the Annual Gypsy Moth Review meeting that will be held in St. Louis, Missouri in November.

Month	Date	Task
June	Monday, 6th	Indiana CAPS Committee Meeting (9:00-12:00am), 104 Smith Hall, Purdue University
June	Monday, 13th	Surveyed SWPM traps
	Wednesday, 14th	Surveyed SWPM traps
June	Tuesday, 20th	Central Plant Board SSC Teleconference from 2:30-4:30
June	Monday, 27th	Surveyed SWPM traps
	Wednesday, 28th	Surveyed SWPM traps

July Accomplishments:

- I continued to work and update the Indiana CAPS website.
- I continued working with Dr. Robert Waltz (IDNR), Dr. Tim Gibb (Purdue Entomology) and myself, in producing an article for the Indiana Academy of Science titled: An overview of arthropod activity in Indiana during 2005.
- I continued to survey, sort through, and identify samples from the SWPM survey.
- I continued, with the help of my intern, to develop more taxonomic information, keys, and reference materials for individuals participating in the SWPM survey as well as the Indiana Department of Natural Resources Nursery Inspectors and USDA APHIS PPQ Officers.
- I am serving on the Program Committee for the Annual Gypsy Moth Review meeting that will be held in St. Louis, Missouri in November.
- Old world bollworm traps set out at PAC centers and began surveying.
- Communicated with Mike Sinsko about GALS survey with County Health Officials.

Month	Date	Task
July	Tuesday, 11th	Roman Snail Population at Connersville, IN with James Manor
	Wednesday 12th	IPSAWG Meeting @ Fort Harrison in Indianapolis (9:00-12:00am)
	Thursday, 13th	IEFPAC Meeting @ Indianapolis IDNR (1:00-3:00 pm)
	Friday, 14th	Surveyed SWPM traps
July	Tuesday, 25th	Surveyed SWPM traps
	Wednesday, 26th	Surveyed SWPM traps

August Accomplishments:

- I continued to work and update the Indiana CAPS website.
- I continued working with Dr. Robert Waltz (IDNR), Dr. Tim Gibb (Purdue Entomology) and myself, in producing an article for the Indiana Academy of Science titled: An overview of arthropod activity in Indiana during 2005.
- I continued to survey, sort through, and identify samples from the SWPM and Old world bollworm survey.
- I continued, with the help of my intern, to develop more taxonomic information, keys, and reference materials for individuals participating in the SWPM survey as well as the Indiana Department of Natural Resources Nursery Inspectors and USDA APHIS PPQ Officers.
- I am serving on the Program Committee for the Annual Gypsy Moth Review meeting that will be held in St. Louis, Missouri in November.

Month	Date	Task
August	Tuesday, 8th	INDR Web Site meeting in Indianapolis
	Wednesday, 9th	Invasive species at Pfendler Hall, Room 203.
	August, 11th	Indiana CAPS Web Site Meeting Room 104 Smith

September Accomplishments:

- I continued to work and update the Indiana CAPS website.
- I continued to survey, sort through, and identify samples from the SWPM and Old world bollworm survey.
- I continued, with the help of my intern, to develop more taxonomic information, keys, and reference materials for individuals participating in the SWPM survey as well as the Indiana Department of Natural Resources Nursery Inspectors and USDA APHIS PPQ Officers.
- I am serving on the Program Committee for the Annual Gypsy Moth Review meeting that will be held in St. Louis, Missouri in November.

Month	Date	Task
September	Wednesday, 6th	Faculty/ Staff Meeting WSLR Hall 9:00am
September	Tuesday, 12th	AGMR Teleconference @ 10:00am
	Wednesday, 13th	Central Plant Board SSC Teleconference @ 2:30pm
	Thursday, 14th	Eastern Region CAPS Committee Teleconference @ 9:00am
	Friday, 15th	AP Advancement Committee meeting @ 9:00am
September	Wednesday, 20th	Forest Health Workgroup Meeting @ 8:30am (Smith 104)
September	Tuesday, 28th	Eastern Region CAPS Committee Teleconference @ 9:00am

October Accomplishments:

- I continued to work and update the Indiana CAPS website.
- I continued to survey, sort through, and identify samples from the SWPM and Old world bollworm survey.
- I continued, with the help of my intern, to develop more taxonomic information, keys, and reference materials for individuals participating in the SWPM survey as well as the Indiana Department of Natural Resources Nursery Inspectors and USDA APHIS PPQ Officers.
- I am serving on the Program Committee for the Annual Gypsy Moth Review meeting that will be held in St. Louis, Missouri in November.

Month	Date	Task
October	Tuesday, 3rd	Pfendler Hall – EAB Talk @ 3:30pm
	Thursday, 5th	IDNR Web Site Meeting @ IDNR in Indianapolis
October	Thursday, 19th	IEFPAC Meeting @ 10:00am in Indianapolis IDNR
October	Friday, 27th	INLA Presentation in Indianapolis on Invasive Species

November Accomplishments:

- I continued to work and update the Indiana CAPS website.
- I continued to survey, sort through, and identify samples from the SWPM and Old world bollworm survey.
- I was on Family leave due to the birth of my daughter November 6th through 26th

Month	Date	Task
November	Wednesday 1st	Emerald ash borer talk @ Lily Nature Center (1:00-3:00pm)

December Accomplishments:

- I continued to work and update the Indiana CAPS website.
- I continued to survey, sort through, and identify samples from the SWPM and Old world bollworm survey.
- I continued to enter NAPIS data.

Month	Date	Task
December	Monday, 4th	Indiana CAPS up date to Extension 8:30am

Indiana CAPS State CAPS Committee April 13th, 2006 Meeting Minutes

Attendance

Christopher Pierce
Gary Simon
Bob Waltz
Steve Yaninek
Gail Ruhl
Karen Rane
Jodie Ellis
Phil Marshall
James Carroll

Review of FY 2005

- Development of Indiana's Most Unwanted List
- Indiana Academy of Science: Insects and other Arthropods of Economic Importance in Indiana, 2004 (C. M. F. Pierce, T. J. Gibb, and R. D. Waltz)
  - In production, Insects and other Arthropods of Economic Importance in Indiana, 2005 (C. M. F. Pierce, T. J. Gibb, and R. D. Waltz)
- Increased invasive insect species reference collection
  - Fact sheets and digital photographs in development
- Invasive plant pest information
  - Doug Keller, IDNR and Ellen Jacquart, TNC
- Surveys
  - Hot Zone survey, Old world bollworm survey, Sudden oak death survey, Asian gypsy moth survey, Emerald ash borer, European gypsy moth, Giant hogweed survey, Karnal bunt of wheat, Kudzu, Pine shoot beetle survey, Siricid trap design survey

Review of FY 2006

- Giant African land snail - CAPS
- Hot Zone survey – CAPS
  - Bark beetles
  - Jewel beetles
  - Longhorned beetles
  - Sirex (more news after April 17th, 2006)
- Old world bollworm - CAPS
- Sudden oak death – CAPS/ IDNR
- Asian ambrosia beetle survey (Hot Zone) – IDNR/ CAPS
- Nun moth and pink gypsy moth – In progress

- Asian ambrosia beetle survey – IDNR/ CAPS
- Emerald ash borer – IDNR/ USDA APHIS PPQ/ Purdue
- European gypsy moth – IDNR
- Kudzu – IDNR

- Giant Hogweed – IDNR Division of Nature Preserves

- Asian gypsy moth – USDA APHIS PPQ
- Karnal bunt – USDA APHIS PPQ
- Pine shoot beetle – USDA APHIS PPQ

Proposals for FY 2007

- Giant African land snail - CAPS
- Hot Zone survey – CAPS
  - Bark beetles
  - Jewel beetles
  - Longhorned beetles
  - Siricid complex (Sirex and Urocerus spp.)
- Old world bollworm - CAPS
- Sudden oak death – CAPS/ IDNR

Indiana "Most Wanted List"

Exotic Invasive Pests of Concern to the State of Indiana

- FY 2006 Exotic Invasive Pests of Concern to the State of Indiana
- Additions or subtractions to the list
- Potential Additions for Insects (see appendix)
  - Southern Mole Cricket
  - Oriental Beetle
  - Asiatic Garden Beetle
  - European Chafer
- It was suggested that Exotic Invasive Pest List should reflect the following categories from the publication "Insects and Other Arthropods of Economic Importance in Indiana in 2004":
  - Agriculture
  - Fruit and Vegetable Production
  - Household and Structural (Urban)
  - Landscape and Ornamental Production
  - Natural Resources
  - Nurseries
  - Public Health
  - Stored Food and Grain
  - Stores
  - Solid Wood Packing Materials
  - Turfgrass
- Categories will allow statistics (agricultural) and economics to their importance to the state
- Categories will allow for easier search capabilities for public
- Pests (insects, diseases, pathogens, nematodes, and micro-invertebrates) should placed into appropriate category
- Some pests may be in multiple categories

- **Committee members with specialization in each discipline should review pest list and bring edits to the June 6th meeting.**
- **Committee members should also note if the pest is either exotic or invasive and distribution if in Indiana**

Indiana CAPS Website

- New Indiana CAPS Website is up and running (http://www.entm.purdue.edu/CAPS/)
- Up and running since March 21
- Surveys, Reports, Publications, and Presentations
- Suggested that a Website sub-committee be created
- Committee will develop and create a pest page template and review information that will be presented to the public
- Committee will be responsible for updating pest information placed on the Indiana CAPS website
- Sub-committee will present information to CAPS SCC
- Sub-committee
  - Christopher Pierce – insects
  - Karen Rane – pathogens
  - Weeds – Potentially Glen Nice (*see committee membership)

Committee Membership

- Do we need to up date committee membership to reflect invasive species needs? AD HOC members can be added to the committee to add input on invasive pests of concern

Soybean Commodity Survey - 2008

- ENTM - Dr. Christian Krupke – Purdue University
- Plant Pathologist? Weed scientist? Glen Nice?

Aquatic Weeds

- Doug Keller – IDNR (Invasive plants)
- Dr. Carole Lembi – Purdue University (Invasive aquatic plants)

- Glen Nice was nominated to help bolster invasive weed specialty to the SCC and that he may have interest in reviewing web information for the CAPS homepage
- Glen Nice has been offered to serve on the SCC. His acceptance or declining of the position will sent out when it is announced.

Indiana CAPS Issues

- The ER CAPS Committee is investigating how we can improve how CAPS is implemented in the eastern region.
- Central to our investigation is determining what pressing issues do the State Plant Regulatory Officials (Dr. Robert Waltz for Indiana) feel need to be addressed that would make the CAPS process better.
- The request is for develop the top three issues facing CAPS.
  - Indiana concerns
  - Taxonomic capabilities and support of surveys

  - Lack of coordination (top down)
  - Do not establish baselines (commodities)

- National Insect Identifier at Purdue – status
- Identifier is expected to be in place by the fall of 2006

- Christopher Pierce will contact Amanda Hodges on the potential of having a bark and longhorned beetle taxonomic class for the Central Plant Board states that is being held for the Southern Plant Board in late-May.

Invasive Species Awareness Month – June

- The Nature Conservancy has been thinking about promoting June as Invasive Species Awareness Month in Indiana
- Try to coordinate activities around the state that will focus attention on invasive (plant and animal).
- Who is planning or might be interested in having an invasive-related event in their area in June?
- Try to help coordinate and focus media and legislative attention on these events.
- Please contact Ellen Jacquart for more information: ejacquart@tnc.org

Schedule next meeting

Next Indiana CAPS Meeting will be on June 6th, 2006 in Smith Hall, Room 104 from 9:00 AM to 12:00 PM.

- **Committee members with specialization in each discipline should review pest list and bring edits to the June 6th meeting.**
- **Committee members should also note if the pest is either exotic or invasive and distribution if in Indiana**
- Note if meeting minutes are missing information; please contact Christopher Pierce so that they can be added.

Appendix

Invasive Scarab Beetles that deserve to be on our "most unwanted list"

1. **Southern Mole Cricket (Tim Gibb)**

2. **Oriental Beetle, *Exomala orientalis* (Coleoptera: Scarabaeidae)**

Introduced into Connecticut in the 1920's, oriental beetle now occurs in most of the northeastern states and has spread across the Mid-Atlantic States into the Midwest. This insect is a serious pest of ornamentals and turfgrass. The larval stages (grubs) feed on the roots of grasses and woody ornamentals whereas the adults feed on the blooms of roses, phlox, petunias, daisies and other flowering plants. Larvae are often transported across state boundaries on nursery stock, but may also be transported in sod.

3. **Asiatic Garden Beetle, *Maladera castanea* (Coleoptera: Scarabaeidae)**

This insect was first discovered in New Jersey in 1922, but has since spread to most of the northeastern

states, west to Ohio and south to South Carolina. This insect is a serious pest of turfgrass and ornamental plants. Larvae of the Asiatic garden beetle feed on the roots of turfgrass and many other plants whereas the adults feed on the foliage and blooms of over 100 plant species of vegetable, herb, fruit and ornamental plants such as butterfly bush, roses, dahlias, asters, chrysanthemums, cosmos, delphinium, petunia, phlox and zinnia. It is suspected that larvae are often transported across state boundaries on nursery stock and sod.

4. **European Chafer, *Rhizotrogus majalis* (Coleoptera: Scarabaeidae)**

European Chafer is native to western and central Europe and was discovered in Newark, NY in 1940. Since then, this insect has spread into Connecticut and upper New York, west to Michigan, where it is considered the most serious white grub pest of home lawns, and south from West Virginia to Maryland. Although the adults apparently do not feed, the larvae feed on the roots of turfgrass and many species of ornamental plants including conifers. Unlike many of their white grub cousins, European chafer grubs tend to favor drier conditions and will remain near the soil surface to feed much later into the fall. This fact, combined with their larger size, significantly increases the likelihood of damage. Again, it is suspected that larvae are often transported across state boundaries on nursery stock and sod.

Indiana CAPS State CAPS Committee June 6th, 2006 Meeting Minutes

Attendance
Christopher Pierce
Gary Simon
Bob Waltz
Steve Yaninek
Gail Ruhl
Karen Rane
Jodie Ellis
Ray Martyn
Glenn Nice
Vicki Cassens & Eileen Luke (*represented James Pheasant who was not in attendance)

FY 2006 Budget
- Discussed current status of revisions to the FY 2006 budget.
- Mike Fouts, IDNR, has sent out the revisions to APHIS.

New Invasive finds in Indiana
- Asian ambrosia beetle is now found in 33 counties in Indiana.
- Potential find of Giant Hogweed was ruled not Giant Hogweed
- Roman snail population was found in Connersville, Indiana.
    - Fact sheet and pest page will be developed for release.

NAPIS (National Agricultural Pest Information System)
- Questions arose of why NPDN samples do not got automatically into NAPIS
    - Data accessibility is the major concern
- State work plans for each state should be posted on the Restricted site
    - Remove financial plans if states are worried
    - Allows for communication of what states are doing
- Restricted Site
    - Possible integration of Restricted site and NAPIS database to integrate
- What is coming soon?
    - Clickable maps that will allow to get records of pests to that county

Indiana "Most Wanted List" Pests of Concern to the State of Indiana
- The Indiana CAPS committee decided to compile a list of Pests of Concern to the State of Indiana with regard to potential economic impact and the possible necessity for future statewide surveys.
- The pests will be categorized according to the following (some pests may fall into several of these criteria):
    - Exotic
    - Invasive
    - Regulatory (Species subject to State Quarantine)
    - Limited Distribution (with potential significant economic impact)

- Remember; please submit your pest lists to me by June 20th, 2006 so that I can incorporate them into our FY 2007 budget.

Central Plant Board Report - Indiana

Date Range: 01-01-2006 thru 12-31-2006
State: INDIANA

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

Target Pest	Counties	Sites* Plants	Traps	Positives	Negatives
SUDDEN OAK DEATH; RAMORUM BLGT VISUAL PHYTOPHTHORA RAMORUM P RAMORUM NATIONAL NURSERY SURVEY	22	830		0	830
SUDDEN OAK DEATH; RAMORUM BLGT ERADICATION PHYTOPHTHORA RAMORUM DECLARATION OF PEST ERADICATION	1	2		1	1
AUSTRALASIAN SOYBEAN RUST GEN. PEST OBSER. PHAKOPSORA PACHYRHIZI GENERAL PEST OBSERVATION; LAB CONFIRMED	6	6		6	0
KARNAL BUNT ELEVATOR;SPEC SITE TILLETIA (NEOVOSSIA) INDICA NATIONAL KARNAL BUNT SURVEY;OPTICAL SCAN	23	33		0	33
GIANT AFRICAN SNAIL (GAS) GEN. PEST OBSER. ACHATINA FULICA GENERAL PEST OBSERVATION; LAB CONFIRMED	92	92		0	92
EUROPEAN RED SLUG GEN. PEST OBSER. ARION (ATER) RUFUS GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		0	1
BROWN GARDEN SNAIL (HELICID) GEN. PEST OBSER. CRYPTOMPHALUS ASPERSUS (HELIX ASPERSA) GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		0	1
BROWN LIPPED SNAIL GEN. PEST OBSER. CEPAEA NEMORALIS GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		0	1

WHITE GARDEN SNAIL (HELICID) GEN. PEST OBSER. THEBA PISANA GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		0	1
STRIPED SNAIL (HYGROMIID) GEN. PEST OBSER. CERNUELLA (HELICELLA) VIRGATA GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		0	1
HYGROMIID SNAIL; A GEN. PEST OBSER. XEROLENTA (HELICELLA) OBVIA GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		0	1
HYGROMIID SNAIL; A GEN. PEST OBSER. MONACHA CARTUSIANA (CARTHUSIANA) GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		0	1
HELICID SNAIL; A GEN. PEST OBSER. HELIX POMATIA GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		1	0
WRINKLED SNAIL GEN. PEST OBSER. CANDIDULA INTERSECTA (HELICELLA CAPERATA) GENERAL PEST OBSERVATION; LAB CONFIRMED	1	1		0	1
EUROPEAN RED MITE CONSENSUS PANONYCHUS ULMI SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
EMERALD ASH BORER VISUAL AGRILUS PLANIPENNIS EMERALD ASH BORER SURVEY	10	40		40	0
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	50		0	50

ASIAN CERAMBYCID (LH.) BEETLE TRAP ANOPLOPHORA GLABRIPENNIS (LONGHORNED) TRAP;40 W BLACKLIGHT	5		8	0	8
ASIAN CERAMBYCID (LH.) BEETLE GEN. PEST OBSER. ANOPLOPHORA GLABRIPENNIS (LONGHORNED) GENERAL PEST OBSERVATION; LAB CONFIRMED	22	50		0	50
JAPANESE CEDAR LONGHORN BEETLE TRAP CALLIDIELLUM (PALAEOCALLIDIUM) RUFIPENNE TRAP;40 W BLACKLIGHT	5		8	0	8
JAPANESE CEDAR LONGHORN BEETLE GEN. PEST OBSER. CALLIDIELLUM (PALAEOCALLIDIUM) RUFIPENNE GENERAL PEST OBSERVATION; LAB CONFIRMED	22	50		0	50
LONGHORNED BEETLE; A TRAP HESPEROPHANES (TRICHOFERUS) CAMPESTRIS TRAP;40 W BLACKLIGHT	5		8	0	8
LONGHORNED BEETLE; A GEN. PEST OBSER. HESPEROPHANES (TRICHOFERUS) CAMPESTRIS GENERAL PEST OBSERVATION; LAB CONFIRMED	22	50		0	50
SAWYER BEETLE; A TRAP MONOCHAMUS ALTERNATUS TRAP;40 W BLACKLIGHT	5		8	0	8
SAWYER BEETLE; A GEN. PEST OBSER. MONOCHAMUS ALTERNATUS GENERAL PEST OBSERVATION; LAB CONFIRMED	22	50		0	50
BROWN SPRUCE LONGHORNED BEETLE TRAP TETROPIUM FUSCUM TRAP;40 W BLACKLIGHT	5		8	0	8
BROWN SPRUCE LONGHORNED BEETLE TRAPPING TETROPIUM FUSCUM NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50		0	50

LONGHORNED BEETLE; A TRAP TETROPIUM CASTANEUM TRAP;40 W BLACKLIGHT	5		8	0	8
LONGHORNED BEETLE; A TRAPPING TETROPIUM CASTANEUM NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50		0	50
CITRUS LONGHORNED BEETLE TRAP ANOPLOPHORA CHINENSIS TRAP;40 W BLACKLIGHT	5		8	0	8
CITRUS LONGHORNED BEETLE GEN. PEST OBSER. ANOPLOPHORA CHINENSIS GENERAL PEST OBSERVATION; LAB CONFIRMED	22	50		0	50
CERAMBYCID BEETLE; A TRAP XYLOTRECHUS SPP. TRAP;40 W BLACKLIGHT	5		8	0	8
CERAMBYCID BEETLE; A TRAPPING XYLOTRECHUS SPP. NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	150		0	150
BROWN FIR LONGHORNED BEETLE TRAP CALLIDIELLUM VILLOSULUM TRAP;40 W BLACKLIGHT	5		8	0	8
BROWN FIR LONGHORNED BEETLE GEN. PEST OBSER. CALLIDIELLUM VILLOSULUM GENERAL PEST OBSERVATION; LAB CONFIRMED	22	50		0	50
CEREAL LEAF BEETLE (CLB) CONSENSUS OULEMA MELANOPUS SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
PLUM CURCULIO CONSENSUS CONOTRACHELUS NENUPHAR SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0

ALFALFA WEEVIL CONSENSUS HYPERA POSTICA SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
EUROPEAN CHAFER (EC) TRAP RHIZOTROGUS MAJALIS TRAP;LINDGREN	2		7	7	0
ASIATIC GARDEN BEETLE TRAP MALADERA CASTANEA TRAP;LINDGREN	3		6	6	0
JAPANESE BEETLE (JB) CONSENSUS POPILLIA JAPONICA SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
SMALLER EUR. ELM BARK BEETLE CONSENSUS SCOLYTUS MULTISTRIATUS SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
PINE SHOOT BEETLE (PSB) TRAP TOMICUS PINIPERDA TRAP;LINDGREN	10		79	0	79
PINE SHOOT BEETLE (PSB) TRAPPING TOMICUS PINIPERDA NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50		0	50
PINE SHOOT BEETLE (PSB) CONSENSUS TOMICUS PINIPERDA SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	66	66		66	0
GRANULATE AMBROSIA BEETLE TRAP XYLOSANDRUS CRASSIUSCULUS TRAP;LINDGREN	7		7	7	0
SPRUCE BARK BEETLE TRAPPING IPS TYPOGRAPHUS NATIONAL EXOTIC WOODBORER/BARK BEETLE	23	54		4	50

SCOLYTID BEETLE; A TRAPPING XYLEBORUS SP. NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50	0	50
SIXTOOTHED BARK BEETLE TRAPPING IPS SEXDENTATUS NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50	0	50
REDHAIRED PINE BARK BEETLE TRAPPING HYLURGUS LIGNIPERDA NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50	0	50
MEDITERRANEAN PINE ENGRAVER TRAPPING ORTHOTOMICUS EROSUS (IPS EROSUS) NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50	0	50
SIXTOOTHED SPRUCE BARK BEETLE TRAPPING PITYOGENES CHALCOGRAPHUS NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50	0	50
BARK BEETLE; A TRAPPING HYLURGOPS PALLIATUS NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50	0	50
LESSER PINE SHOOT BEETLE TRAPPING TOMICUS MINOR NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50	0	50
EXOTIC BARK BEETLE; AN TRAPPING TRYPODENDRON DOMESTICUM (XYLOTERUS D'CUS) NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50	0	50
BARK BEETLE; A TRAPPING SCOLYTUS SCHEVYREWI NATIONAL EXOTIC WOODBORER/BARK BEETLE	22	50	0	50
HESSIAN FLY CONSENSUS MAYETIOLA DESTRUCTOR SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92	92	0

APPLE MAGGOT (AM) CONSENSUS RHAGOLETIS POMONELLA SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
SPOTTED ALFALFA APHID CONSENSUS THERIOAPHIS MACULATUS SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
SOYBEAN (SOYA BEAN) APHID CONSENSUS APHIS GLYCINES SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
POTATO LEAFHOPPER CONSENSUS EMPOASCA FABAE SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
SAN JOSE SCALE (SJS) CONSENSUS QUADRASPIDIOTUS PERNICIOSUS SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
PEAR PSYLLA CONSENSUS CACOPSYLLA PYRICOLA SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
MEGACHILID BEE; A UNSPECIFIED MEGACHILE SCULPTURALIS UNSPECIFIED	1	2		2	0
STEELBLUE WOODWASP [EUROPEAN] TRAP SIREX NOCTILIO TRAP;LINDGREN	11		21	0	21
GYPSY MOTH (EUROPEAN)(GM) CONSENSUS LYMANTRIA DISPAR SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	7	7		7	0
ASIAN GYPSY MOTH (AGM) TRAP LYMANTRIA DISPAR SSP. TRAP;MILK CARTON PHEROMONE (GYP MOTH)	1		10	0	10

BOLLWORM;CORN EARWORM;(BW-CEW) CONSENSUS HELICOVERPA ZEA (TOMATO FRUITWORM;PODW) SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
FALL ARMYWORM (FAW) CONSENSUS SPODOPTERA FRUGIPERDA SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
OLD WORLD BOLLWORM TRAP HELICOVERPA ARMIGERA TRAP;HELIOTHIS LURE	6		30	0	30
EUROPEAN CORN BORER (ECB) CONSENSUS OSTRINIA NUBILALIS SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
EUROPEAN PINE SHOOT MOTH(EPSM) CONSENSUS RHYACIONIA BOULIANA SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	92	92		92	0
SOYBEAN CYST NEMATODE (SCN) CONSENSUS HETERODERA GLYCINES SCIENTIFIC CONSENSUS/GENERAL AGREEMENT	81	81		81	0
HYDRILLA VISUAL HYDRILLA VERTICILLATA WEED SURVEY GENERAL;INF. AREA	1	1		1	0
ELODEA; BRAZILIAN VISUAL EGERIA DENSA WEED SURVEY GENERAL;INF. AREA	6	9		9	0
KUDZU AERIAL PUERARIA LOBATA AERIAL SURVEY	6	10		10	0
GIANT HOGWEED GEN. PEST OBSER. HERACLEUM MANTEGAZZIANUM GENERAL PEST OBSERVATION; LAB CONFIRMED	2	3		3	0

GIANT HOGWEED VISUAL HERACLEUM MANTEGAZZIANUM WEED SURVEY GENERAL;INF. AREA	66	70	0	70

Invasive Plants - 2002

NORWAY MAPLE LITERATURE ACER PLATANOIDES DATA DERIVED FROM LITERATURE REVIEW	92	92	62	30
COMMON PERIWINKLE; VINCA LITERATURE VINCA MINOR DATA DERIVED FROM LITERATURE REVIEW	92	92	92	0
BLACK SWALLOW WORT LITERATURE VINCETOXICUM (CYNANCHUM) NIGRUM DATA DERIVED FROM LITERATURE REVIEW	2	2	2	0
PRINCESS TREE; ROYAL PAULOWNIA LITERATURE PAULOWNIA TOMENTOSA DATA DERIVED FROM LITERATURE REVIEW	92	92	15	77
JAPANESE HOPS LITERATURE HUMULUS JAPONICUS DATA DERIVED FROM LITERATURE REVIEW	92	92	7	85
HONEYSUCKLE; JAPANESE LITERATURE LONICERA JAPONICA DATA DERIVED FROM LITERATURE REVIEW	88	88	88	0
TATARIAN HONEYSUCKLE LITERATURE LONICERA TATARICA DATA DERIVED FROM LITERATURE REVIEW	1	1	1	0
AMUR BUSH HONEYSUCKLE LITERATURE LONICERA MAACKII DATA DERIVED FROM LITERATURE REVIEW	82	82	82	0
MORROW'S HONEYSUCKLE LITERATURE	62	62	62	0

LONICERA MORROWII DATA DERIVED FROM LITERATURE REVIEW				
BELLA HONEYSUCKLE LITERATURE LONICERA X BELLA DATA DERIVED FROM LITERATURE REVIEW	65	65	65	0
EUROPEAN CRANBERRYBUSH VIBURNU LITERATURE VIBURNUM OPULUS DATA DERIVED FROM LITERATURE REVIEW	92	92	47	45
PURPLE WINTER CREEPER LITERATURE EUONYMUS FORTUNEI DATA DERIVED FROM LITERATURE REVIEW	92	92	92	0
WINGED EUONYMUS LITERATURE EUONYMUS ALATUS DATA DERIVED FROM LITERATURE REVIEW	92	92	45	47
ORIENTAL BITTERSWEET LITERATURE CELASTRUS ORBICULATUS DATA DERIVED FROM LITERATURE REVIEW	92	92	37	55
KNAPWEED; SPOTTED LITERATURE CENTAUREA BIEBERSTEINII (MACULOSA) DATA DERIVED FROM LITERATURE REVIEW	92	92	6	86
THISTLE; CANADA LITERATURE CIRSIUM ARVENSE DATA DERIVED FROM LITERATURE REVIEW	92	92	89	3
BLACK ALDER; EUROPEAN ALDER LITERATURE ALNUS GLUTINOSA DATA DERIVED FROM LITERATURE REVIEW	92	92	3	89
MUSTARD; GARLIC LITERATURE ALLIARIA PETIOLATA DATA DERIVED FROM LITERATURE REVIEW	84	84	84	0
DAMESROCKET LITERATURE	92	92	81	11

HESPERIS MATRONALIS DATA DERIVED FROM LITERATURE REVIEW				
CUT-LEAVED TEASEL LITERATURE DIPSACUS LACINIATUS DATA DERIVED FROM LITERATURE REVIEW	92	92	1	91
RUSSIAN OLIVE LITERATURE ELAEAGNUS ANGUSTIFOLIA DATA DERIVED FROM LITERATURE REVIEW	1	1	1	0
AUTUMN-OLIVE LITERATURE ELAEAGNUS UMBELLATA DATA DERIVED FROM LITERATURE REVIEW	92	92	92	0
SPURGE; LEAFY LITERATURE EUPHORBIA ESULA DATA DERIVED FROM LITERATURE REVIEW	92	92	4	88
BROME; SMOOTH LITERATURE BROMUS INERMIS DATA DERIVED FROM LITERATURE REVIEW	92	92	25	67
CHINESE SILVERGRASS LITERATURE MISCANTHUS SINENSIS DATA DERIVED FROM LITERATURE REVIEW	92	92	4	88
CANARYGRASS; REED LITERATURE PHALARIS ARUNDINACEA DATA DERIVED FROM LITERATURE REVIEW	92	184	115	69
REED; COMMON LITERATURE PHRAGMITES AUSTRALIS (COMMUNIS) DATA DERIVED FROM LITERATURE REVIEW	92	92	56	36
JAPANESE STILT GRASS LITERATURE MICROSTEGIUM VIMINEUM DATA DERIVED FROM LITERATURE REVIEW	92	95	19	76
IVY; GROUND LITERATURE	92	92	44	48

GLECHOMA HEDERACEA DATA DERIVED FROM LITERATURE REVIEW				
CROWN VETCH LITERATURE CORONILLA VARIA DATA DERIVED FROM LITERATURE REVIEW	92	92	92	0
PROFESSOR-WEED (GOATSRUE) GEN. PEST OBSER. GALEGA OFFICINALIS GENERAL PEST OBSERVATION; LAB CONFIRMED	78	78	0	78
CHINESE BUSH CLOVER; SERICEA LITERATURE LESPEDEZA CUNEATA DATA DERIVED FROM LITERATURE REVIEW	92	92	9	83
BICOLOR LESPEDEZA LITERATURE LESPEDEZA BICOLOR DATA DERIVED FROM LITERATURE REVIEW	92	92	1	91
WHITE SWEET CLOVER LITERATURE MELILOTUS ALBA DATA DERIVED FROM LITERATURE REVIEW	92	92	92	0
CLOVER; SWEET LITERATURE MELILOTUS OFFICINALIS DATA DERIVED FROM LITERATURE REVIEW	92	92	92	0
BLACK LOCUST LITERATURE ROBINIA PSEUDOACACIA DATA DERIVED FROM LITERATURE REVIEW	92	92	65	27
STAR-OF-BETHLEHEM LITERATURE ORNITHOGALUM UMBELLATUM DATA DERIVED FROM LITERATURE REVIEW	92	92	91	1
LYTHRUM (LOOSESTRIFE); PURPLE LITERATURE LYTHRUM SALICARIA DATA DERIVED FROM LITERATURE REVIEW	35	35	35	0
WHITE MULBERRY LITERATURE	92	92	92	0

MORUS ALBA DATA DERIVED FROM LITERATURE REVIEW				
EUROPEAN PRIVET LITERATURE LIGUSTRUM VULGARE DATA DERIVED FROM LITERATURE REVIEW	92	92	4	88
BLUNT-LEAVED PRIVET LITERATURE LIGUSTRUM OBTUSIFOLIUM DATA DERIVED FROM LITERATURE REVIEW	92	92	89	3
KNOTWEED; JAPANESE LITERATURE POLYGONUM CUSPIDATUM DATA DERIVED FROM LITERATURE REVIEW	92	92	77	15
CREEPING CHARLIE LITERATURE LYSIMACHIA NUMULARIA DATA DERIVED FROM LITERATURE REVIEW	92	92	88	4
COMMON BUCKTHORN LITERATURE RHAMNUS CATHARTICA DATA DERIVED FROM LITERATURE REVIEW	20	20	20	0
GLOSSY BUCKTHORN LITERATURE RHAMNUS FRANGULA DATA DERIVED FROM LITERATURE REVIEW	11	11	11	0
ROSE; MULTIFLORA LITERATURE ROSA MULTIFLORA DATA DERIVED FROM LITERATURE REVIEW	92	92	92	0
WINE RASPBERRY LITERATURE RUBUS PHOENICOLASIUS DATA DERIVED FROM LITERATURE REVIEW	4	4	4	0
TREE-OF-HEAVEN LITERATURE AILANTHUS ALTISSIMA DATA DERIVED FROM LITERATURE REVIEW	92	92	92	0
SIBERIAN ELM LITERATURE	92	92	87	5

ULMUS PUMILA DATA DERIVED FROM LITERATURE REVIEW				
GIANT HOGWEED GEN. PEST OBSER. HERACLEUM MANTEGAZZIANUM GENERAL PEST OBSERVATION; LAB CONFIRMED	78	78	0	78
ERECT HEDGEPARSLEY LITERATURE TORILIS JAPONICUS DATA DERIVED FROM LITERATURE REVIEW	92	92	16	76
CHINESE YAM; AIR POTATO LITERATURE DISCOREA BATATAS DATA DERIVED FROM LITERATURE REVIEW	20	20	20	0

Indiana CAPS State Survey Activities – 2005

Project Coordinator: Dr. Christopher M. F. Pierce

State: Indiana

Project: Giant African Land Snail Education and Outreach

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:	Common Name:
Achatina fulica (Bowditch)	Giant African land snail

I) OBJECTIVES AND NEED FOR ASSISTANCE:

Giant African land snail, *Achatina fulica* (Bowditch), is a vector of *Angiostrongylus cantonensis* (Nematoda) causing eosinophilic meningitis (or cerebral angiostrongyliasis) in humans. The spread of the disease has been correlated with the spread of *A. fulica*. Achatinids carry other diseases that affect humans and animals. Although Giant African Land Snail ecological host range does not include Indiana, over 200 snails in 2004 were collected and eradicated from homeowners, teachers, trade shows, and pet stores. The objective is to educate the specific target segments of the general populace as to the dangers which Giant African Land Snails present and elicit voluntary reporting of finds, since no directed survey is to take place.

II) RESULTS OR BENEFITS EXPECTED:

This project will provide information about the presence or absence of a harmful mollusk not known to occur in Indiana. Knowledge of the existence of this pest species and educational outreach will be crucial to the human health and safety of the residence in Indiana.

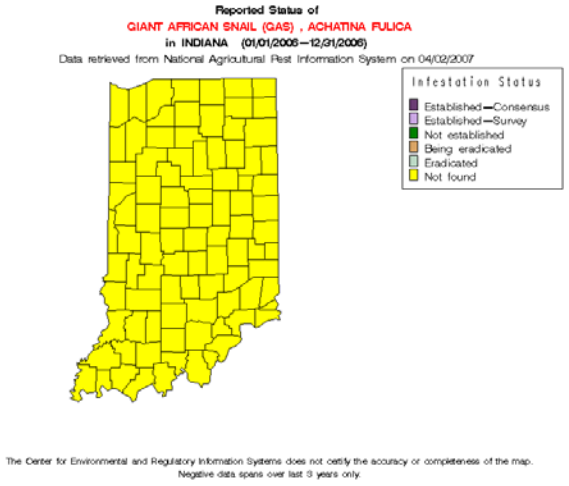
III) APPROACH:

Educate the specific target segments of the general populace as to the dangers which Giant African Land Snails present and elicit voluntary reporting of finds, since no directed survey is to take place. Educational material (fact sheets and posters) will be mailed to the 92 Purdue University Extension Educators in Indiana, 92 County Health Departments in Indiana, 294 school districts in Indiana (targeting science teachers), 166 pet stores in Indiana, and provide to trade show venues in Indiana. Educational presentations will be made available to the Hoosier Association of Science Teachers, Inc., Master Gardeners, 4-H, and Extension Educators. Dr. Christopher Pierce will coordinate collections and destruction of suspect specimens through USDA APHIS PPQ Officers and local government agencies. Dr. Christopher Pierce will coordinate and implement the education and outreach for Giant African Land Snail. Jodie Ellis will assist in the educational outreach. 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.

IV) BENEFITS AND RESULTS OF SURVEY:

To date, no suspect species have been identified. 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.



2006 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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 1 will be involved heavily in this activity as well.

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

Scientific Name:	Common Name:
Anoplophora chinensis (Forster)	Citrus longhorned beetle
Anoplophora glabripennis (Motschulsky)	Asian longhorned beetle
Callidiellum rufipenne (Motschulsky)	Small Japanese cedar longhorned beetle
Chlorophorous annularis Fabricius	Bamboo /tiger bamboo longhorned beetle
Hesperophanes (Trichoferus) campestris (Faldermann)	Chinese longhorned beetle
Hylurgops (Hylurgus) palliatus Gyllenhal (conifer)	Exotic bark beetle
Hylurgus ligniperda (Fabricius)	Golden-haired bark beetle
Ips sexdentatus (Boerner)	Six-spined engraver beetle
Ips typographus (Linnaeus)	European spruce bark beetle
Monochamus alternatus Hope	Japanese pine sawyer beetle
Orthotomicus erosus (Wollaston)	Mediterranean pine engraver beetle
Pityogenes chalcographus (Linnaeus)	Six-toothed spruce engraver
Tetropium castaneum Linnaeus	Black spruce longhorned beetle
Tetropium fuscum (Fabricius)	Brown spruce longhorned beetle
Tomicus minor (Hartig)	Lesser pine shoot beetle
Tomicus piniperda (Linnaeus)	Common pine shoot beetle
Trypodendron domesticum (Linnaeus)	European hardwood ambrosia beetle
Xyleborus spp.	Exotic bark beetles
Xylotrechus spp.	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 bark and woodboring beetles in Indiana via solid wood packing material (SWPM). Early detection and outreach education are the goals of this survey.

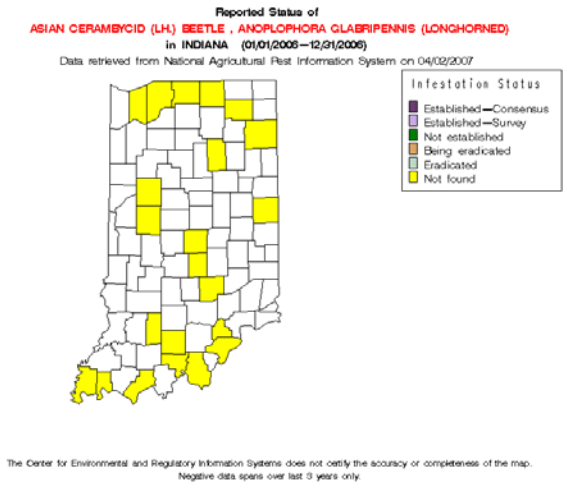
III) APPROACH:

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.

IV) BENEFITS AND RESULTS OF SURVEY:

To date, no suspect species have been identified. 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.



2006 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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:	Common Name:
Helicoverpa armigera Hübner	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:

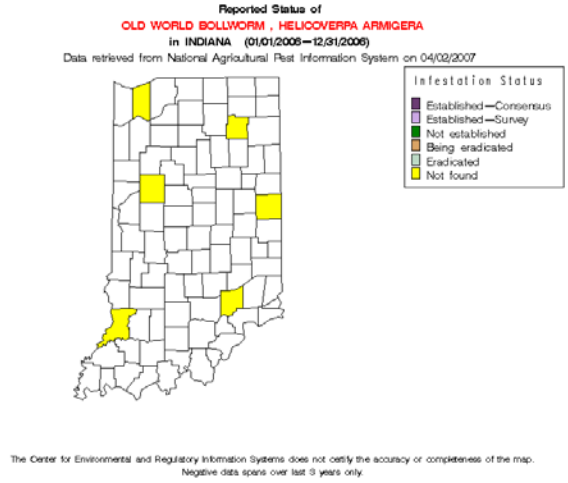
Pheromone traps for *H. armigera* will be deployed and serviced in 6 Indiana Counties (Jennings, Knox, Porter, Randolph, Tippecanoe, and Whitley) that contain Purdue Agricultural Centers. Counties were selected using the Old world bollworm MRA criteria and due to the production of corn, soybeans, alfalfa, 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.

IV) 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 2006 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.



2006 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

Project Coordinator: Dr. Christopher M. F. Pierce

State: Indiana

Project: Siberian silk moth 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:	Common Name:
Dendrolimus sibiricus Tschetverikov	Siberian silk moth

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 *Dendrolimus sibiricus* Tschetverikov in conjunction with USDA APHIS PPQ officers in Indiana.

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 *Dendrolimus sibiricus* Tschetverikov 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, 2 sites will be selected following guidelines from the manual of the *Dendrolimus sibiricus* Tschetverikov trapping protocols. Ten gypsy moth milk cartons at each site with a lure consisting of 1:1 blend of the presumed sex attractant pheromone compound suggested. Traps will be placed in mid-July and serviced through September. Samples will be prescreened by summer interns. Suspect specimens would be sent to a National Identifier of the USDA-APHIS-PPQ for positive 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.

IV) BENEFITS AND RESULTS OF SURVEY:

This project was not initiated in 2006 due to problems with amendments to the CAPS agreement. Indiana plans to survey for this pest in 2007 following these guidelines.

Project Coordinator: Dr. Christopher M. F. Pierce
State: Indiana

Project: *Sirex noctilio* and Port Survey
Project Category (Part I, II, or III – see page 2-1 of CAPS Guidelines):
Part III, it is expected that the SSC in Part 1 will be involved heavily in this activity as well.

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

Scientific Name:	Common Name:
Sirex noctilio Fabricius	Sirex woodwasp

IV) 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 *Sirex noctilio* Fabricius in conjunction with USDA APHIS PPQ officers in Indiana.

V) 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 *Sirex noctilio* Fabricius in Indiana via solid wood packing material (SWPM). Early detection and outreach education are the goals of this survey.

VI) APPROACH:

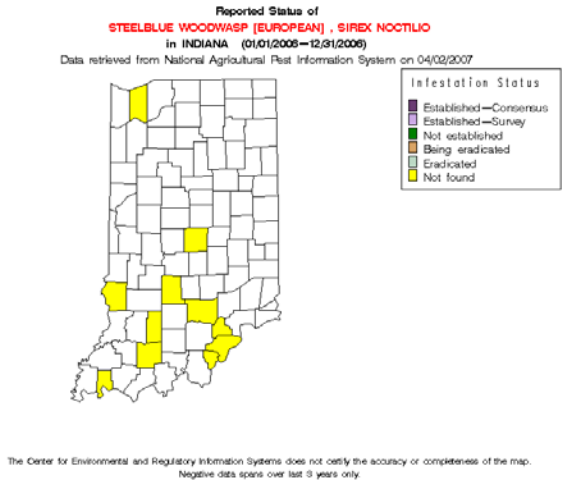
In conjunction with Indiana USDA APHIS PPQ Officers and the Indiana CAPS program, 50 sites will be selected following guidelines from the Exotic Wood Borer Bark Beetle Field manual 2004 as well as the *Sirex noctilio* Fabricius trapping protocols (04-17-06). The Indiana CAPS program will be responsible for 7 sites in central Indiana. Currently each site contains three Lindgren funnel traps containing one of the following lures: UHR ethanol, UHR ethanol/ alpha-pinene, and Tri-lure. An additional Lindgren funnel trap will be placed at each site with a lure consisting of (75% + enatomer)-alpha-pinene (70%) and beta-pinene (30%) is suggested. Traps will be placed in mid-May and serviced bi-weekly until mid-October. Visual surveys for *Sirex noctilio* Fabricius will also occur bi-weekly. Samples will be prescreened by summer interns. Suspect specimens would be sent to Glenn Landau of the USDA-APHIS-PPQ for positive 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.

IV) 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. Sirex noctilio were not present in any of the traps during the 2006 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.



2006 Cooperative Agricultural Pest Survey (CAPS) Annual Report for the State of Indiana

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.

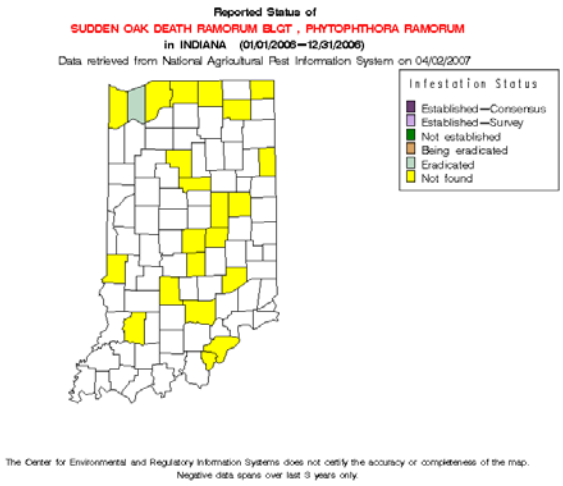
III) APPROACH:

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.

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 800 symptomatic samples were collected by IDNR inspectors and USDA APHIS PPQ officers and submitted to the P&PDL for testing. *Phytophthora ramorum* was detected in Indiana for the first time in July 2006, on a viburnum that had been shipped to a retail outlet from an Oregon nursery.

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.

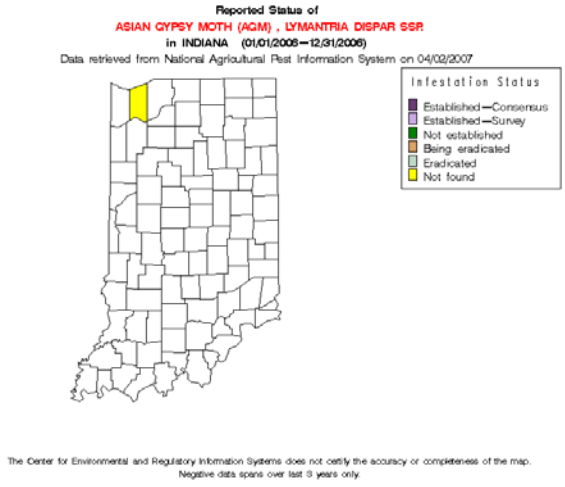


Additional Indiana State Survey Activities – 2006

2006 Indiana Asian Gypsy Moth Survey

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

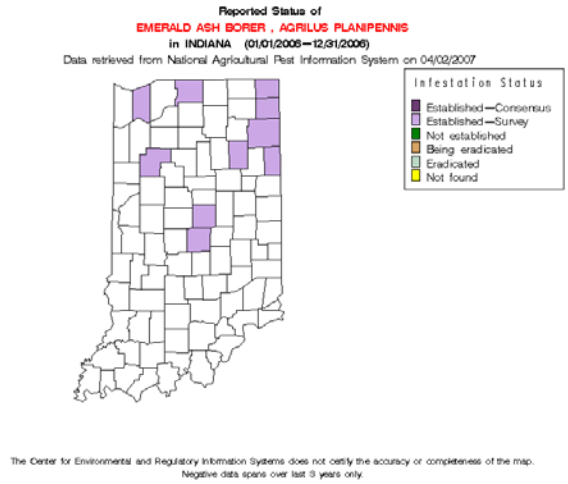
The Indiana Asian Gypsy Moth survey program will provide early detection of Asian Gypsy Moth introductions resulting from the international movement of ships and cargo. Ten milk carton traps were placed in Porter County at the Port of Indiana (Burns Harbor). Traps were placed on June 30, 2006 and checked on a bi-weekly basis. Traps were removed on September 9 of 2006. No specimens were detected during the course of this survey.



2006 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 2006, PPQ/IDNR surveyors placed approximately 2,485 detection trees in the entire state of Indiana. The detection trap trees were set at and within 2 miles of high risk locations such as campgrounds, sawmills, landscape nurseries starting in March. The trees are currently being removed and bark is being peeled. We are about 1/3 of the way to completion. So far, we have confirmed two new locations of EAB in the state one at Burns Harbor, Porter County and the other is in Adams County using the detection tree method. EAB detection tree catches are also being examined for other exotics species. In the future, Indiana PPQ will continue targeting this exotic species.



2006 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 2006 Cooperative Gypsy Moth Survey completed its 19th year of the statewide survey. The survey is part of the Slow-The-Spread (STS) Program and uses the STS protocol for its' design and operation dividing the state 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, respectively, for the three zones. Across all zones, the survey set 13,114 detection and 3,514 intensive traps all referenced by GPS. The survey detected 12,078 moths from 54 counties ranging from 1 to 3,358 moths per county (Figure 2). This is a decrease from 2005 (18,222), but did not fall back to the low catch of 2004 (9,034).

The results of the 2006 survey found that the majority of the moth catch was in the Evaluation Zone (Table 1). The Evaluation Zone, which includes the quarantined counties of Steuben, LaGrange, Elkhart, Noble, Allen, and DeKalb, detected 58.9% of the moths (7,118 of 12,078). The northern third of the state falls in the Action Zone, which is below the Evaluation Zone under STS protocol. The Action Zone detected 39.9% of the moths (4,814 of 12,078). The majority of the Action Zone moth catch occurs in the eastern part of the zone adjacent to the Evaluation Zone. The State Area detected 1.2% of the moths (146 of 12,078). The Scott county site, which caught 2,830 in 2005, was treated in 2006. The total catch for the site in 2006 is 25 moths captured in 102 delimit traps. The area is being delimited in 2007 for post treatment evaluation. One detection trap in Delaware County caught 21 moths, and surveys detected eggmasses. This site will be treated for eradication in 2007. Four detection traps in the Hoosier are positive and planned for delimitation in 2007. One of the traps is in the Deam Wilderness Area. All other positive traps in the state zone are delimited the following year.

Treatments to eradicate and slow-the-spread and development of gypsy moth were conducted on 30 sites totaling 37,614 acres in 9 counties (Table 2 & Figure 4). Nineteen sites totaling 11,085 acres in seven counties were treated with Btk at 24 BIU/acre/application. Sixteen sites were treated with two applications (10,094 acres). Three sites were inside mating disruption sites and treated with one application (991 acres). Eleven sites totaling 26,529 acres in 5 counties were treated with mating disruption. Seven sites totaling 22,265 acres and four sites totaling 4,264 acres received one application of pheromone flakes for mating disruption at 6 and 15 grams, respectively, in June. Thirteen sites were proposed for ground treatment with one application of Dimilin at 0.5 oz/acre. Of the thirteen sites, two were not treated (Bremen South and Crothersville).

Delimit surveys of Btk sites to monitor treatment success found two sites failed (Fort Wayne West and Churubusco) and four sites had only partial success (Ege South, Huntertown North, Huntertown South and County Road 300 & 650W). Delimit surveys also found five Btk sites had successful treatment but populations still existed in the area (Osceola-Elkhart North, Osceola-Elkhart South, Wakarusa, Cobbs

Corner and Portage). Rain within 6 hours after second application contributed to the failures.

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.

The moth lines (Figure 3) projected from the 2006 treatments and survey data have remained fairly static across the state with no significant change from the mothlines for 2004 and 2005. 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; 281,072 moths have been caught in 90 of the 92 counties. Gypsy moth was not detected in Dubois and Sullivan Counties which are the two counties where gypsy moth has not been detected since surveys began in 1970 (Figure 2).

The survey results indicate gypsy moth is present in the northern and northeastern area of St. Joseph County and no treatments for 2007 are identified by the decision algorithm. Evaluating the survey data, decision algorithm recommendations and prior gypsy moth history in St. Joseph County, the gypsy moth management team is recommending that St. Joseph County be quarantined (Figure 5).

Table 1: Number of male gypsy moths caught in the three survey areas from 2004 to 2006.

Year	STS Evaluation Area	STS Action Area	State Area	Total
2006	7,118	4,814	146	12,078
2005	5,980	9,290	2,953	18,222
2004	3,887	5,108	19	9,014

Table 2: Gypsy moth treatment site for 2006 by county and treatment method.

COUNTY	SITES	TREATMENT	
		Method	Acres(A)/Trees
Allen	Arcola	Ground	2
	Arcola MD 06	MD 6 gm	833 (425)
	Ege North	Btk x 2	154
	Ege South	Btk x 2	165
	Fort Wayne East 06	Btk x 1	265
	Fort Wayne West 06	Btk x 1	259
	Fort Wayne MD 06	MD 6 gm	5,275 (5,100)
	Leesburg 06	Ground	1
	Huntertown North 06	Btk x 2	1233
	Huntertown South 06	Btk x 2	798
	NW Allen East MD 06	MD 6 gm	4,669 (3,975)
	NW Allen West MD 06	MD 6 gm	8,666 (5,200)
Elkhart	CR 1	Ground	2
	CR 33 & 34	Ground	7
	CR 4 & 11	Btk x 2	183
	CR 22	Ground	34
	Hively Road North	Btk x 2	663
	Hively Road South	Btk x 2	281
	Jayco 06	Ground	1
	Osceola-Elkhart North	Btk x 2	1008
	Osceola-Elkhart South	Btk x 2	3507

COUNTY	SITES	TREATMENT	
		Method	Acres/Trees
Elkhart	Middlebury CR 37	Ground	3
	State Road 4	Ground	2
	Wakarusa 06	Btk x 2	83
Kosciusko	Lake Wawasee 06	MD 6 gm	645 (525)
Lake	Springville 06	Btk x 2	358
LaGrange	Topeka 06	Ground	10
Marshall	Bremen South **	Ground	1
Noble	Chain O' Lakes ++	Ground	11
	Chain O' Lakes C	MD 15 gm	143 (125)
	Chain O' Lakes N	MD 15 gm	2,148 (2,050)
	Chain O' Lakes S	Md 15 gm	1,561 (950)
Porter	Cobb's Corner Core	Ground	10
	Cobb's Corner	Btk x 2	132
	Portage	Btk x 2	909
Scott	Crothersville 06	Btk x 2	275
	Crothersville **	Ground	21
St. Joseph	Darden Road	MD 15 gm	413 (275)
	Lilac Road Core	Btk x 1	467
	Lilac Road MD	MD 6 gm	1,548 (1,475)
Whitley	Churubusco 06	Btk x 2	322
	CR 300 S $ 650 W	Btk x 2	23
	Lincoln Way 06	MD 6 gm	630 (375)
Total Btk		11,085	
Total Mating Disruption		26,529 (20,475)	
Total All Treatment		37,614 (31,560)	

** Proposed for treatment but not treated

++ Ten of eleven trees treated

MD "Acres (A)" are treatment acres and (habitat acres) inside treatment acres. Treatment and habitat acres are the same for Btk.

Figure 1: STS Action Zones for 2006

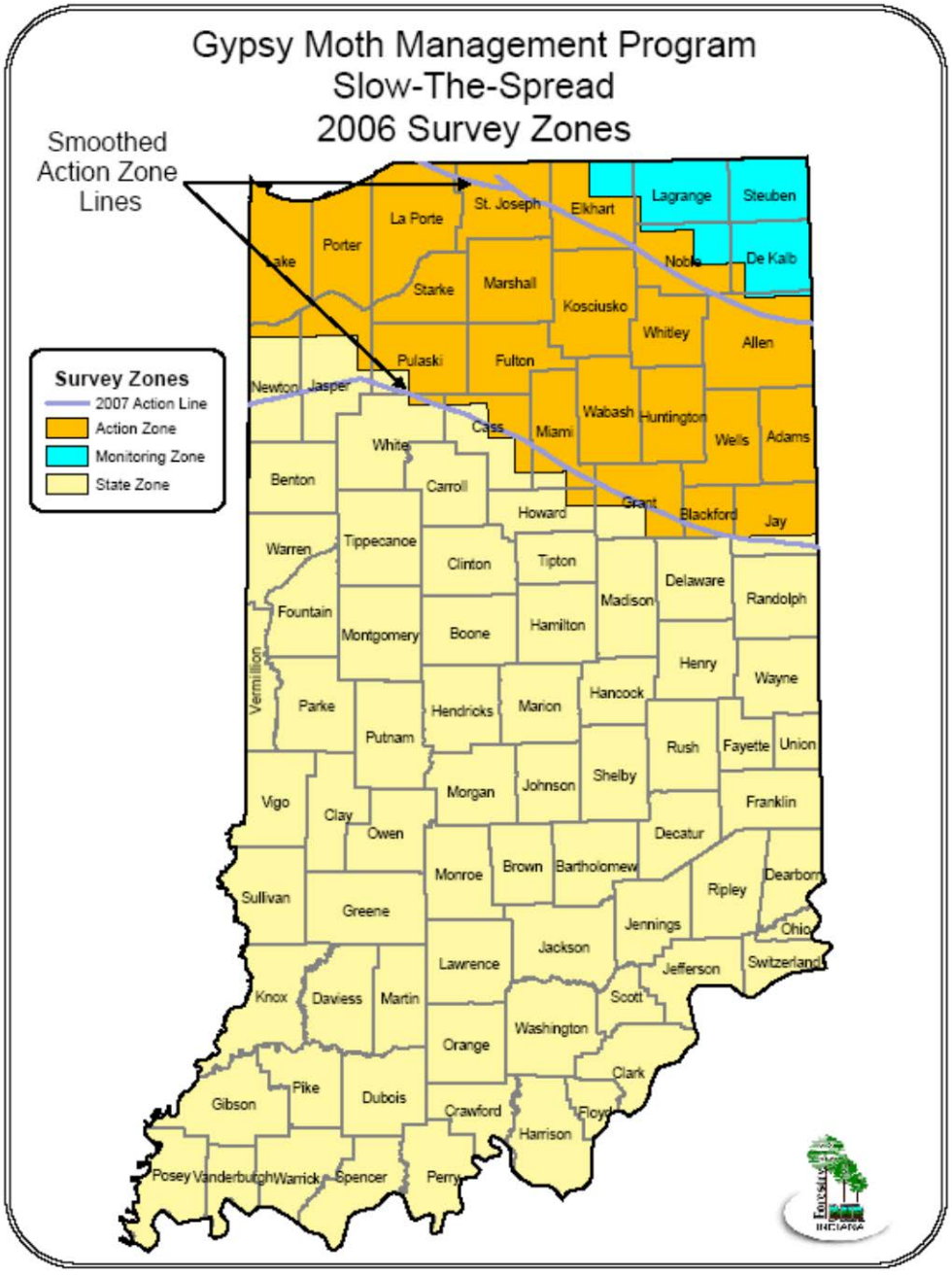


Figure 2: Number of male moths caught per county

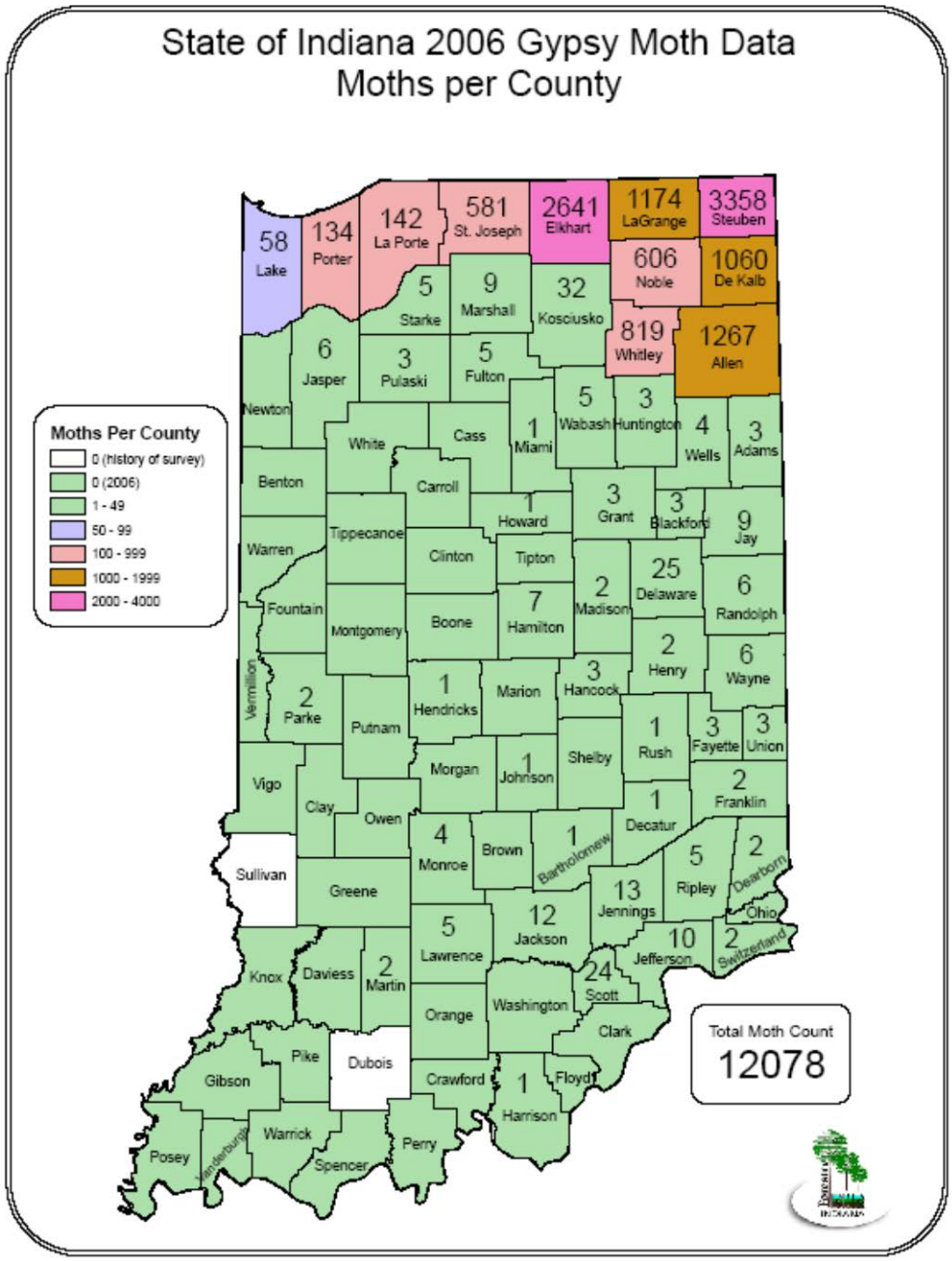


Figure 3: 2006 smoothed moth lines.

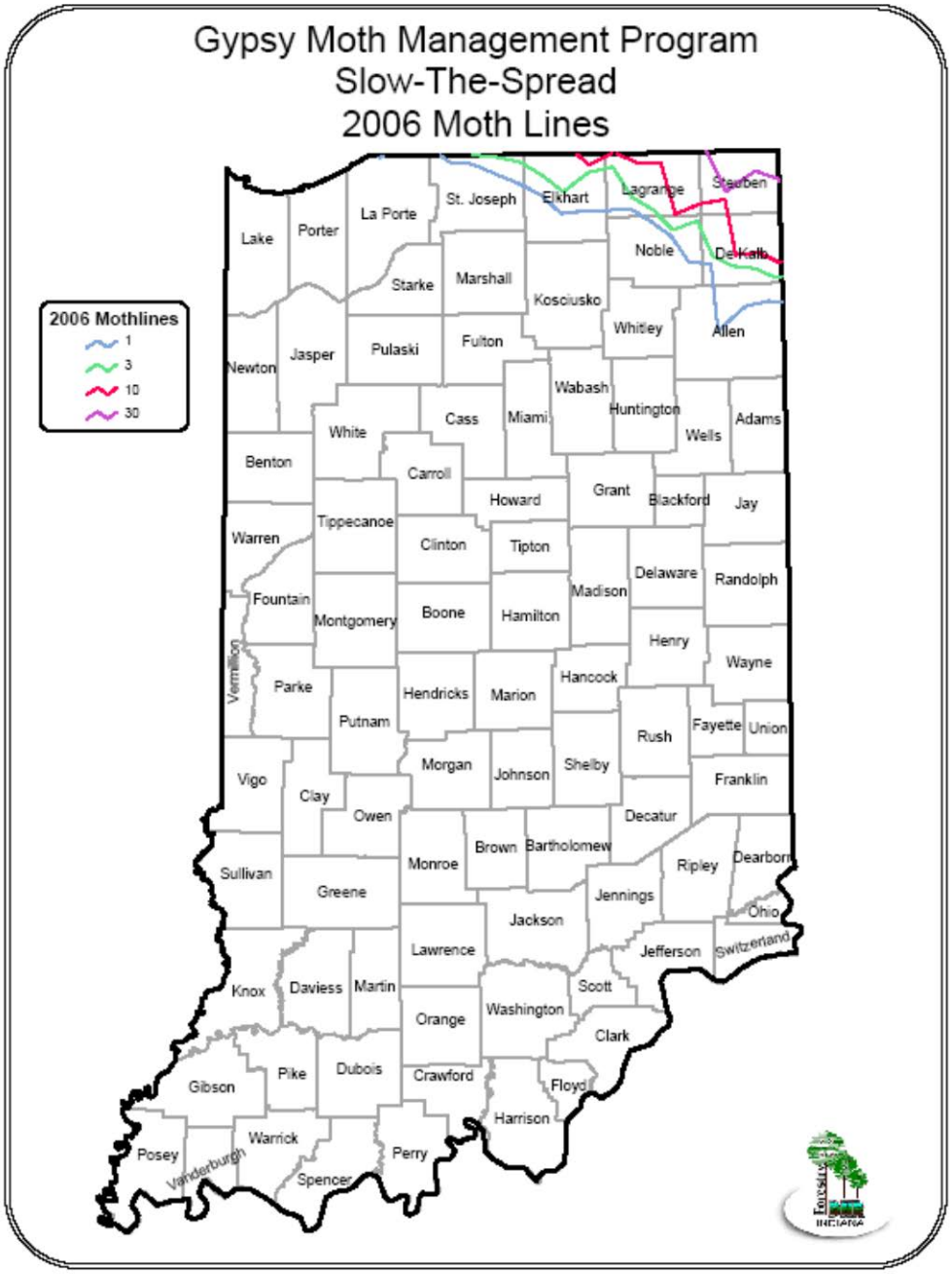


Figure 4

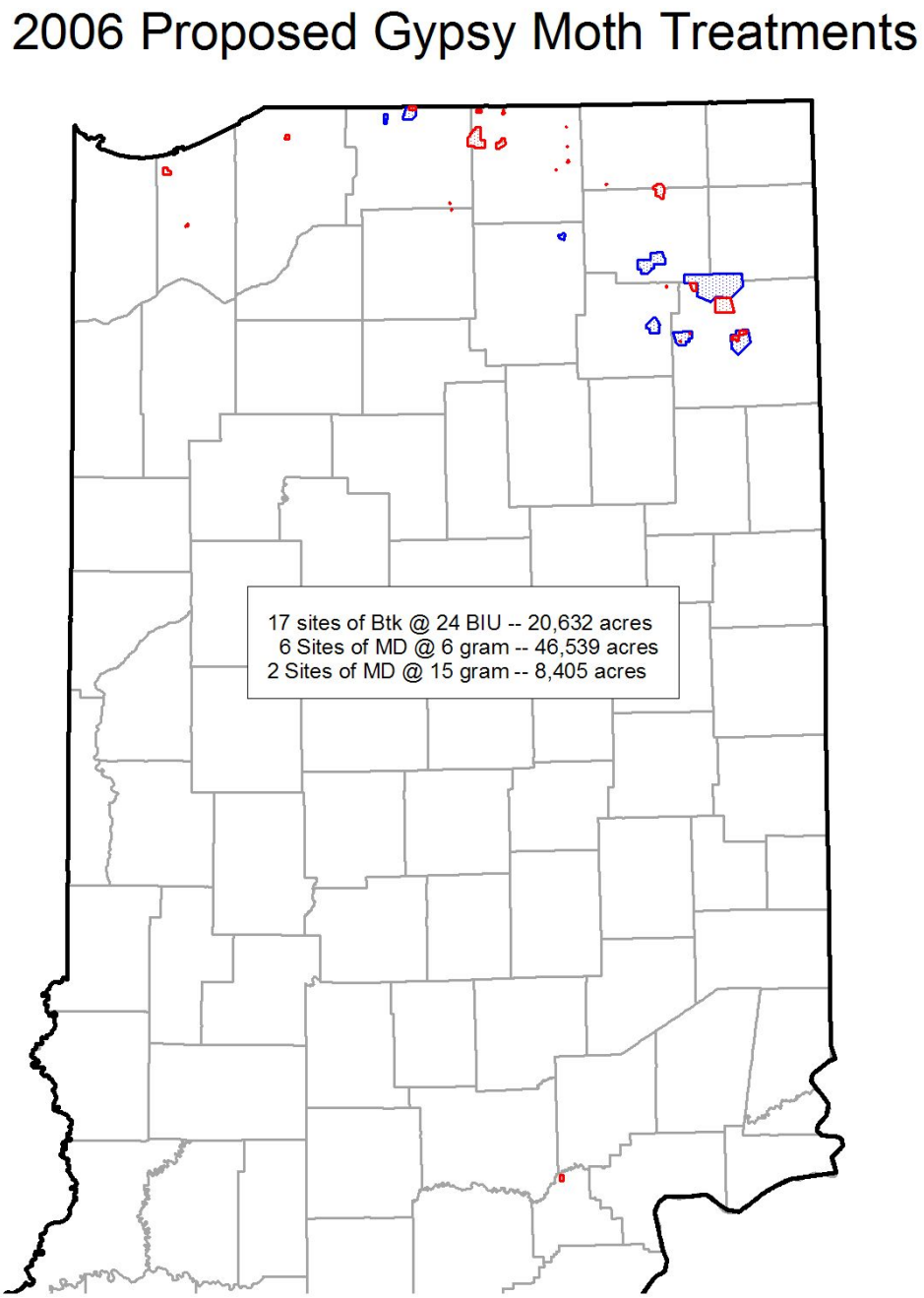

2006 Proposed Gypsy Moth Treatments
17 sites of Btk @ 24 BIU -- 20,632 acres
6 Sites of MD @ 6 gram -- 46,539 acres
2 Sites of MD @ 15 gram -- 8,405 acres

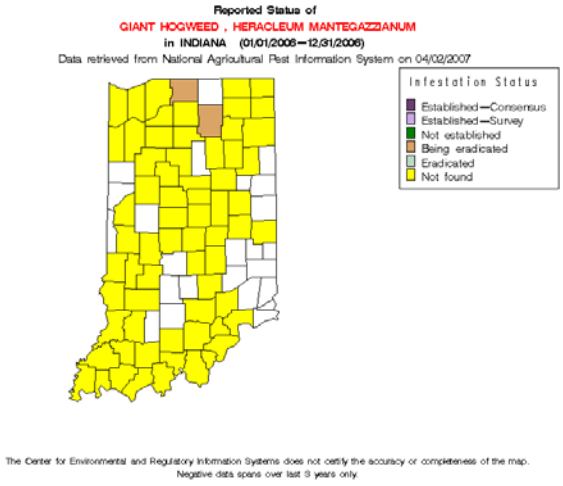
Figure 5: Current quarantined counties

2006 Indiana Giant Hogweed Survey

Indiana Department of Natural Resources, Division of Nature Preserves

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.

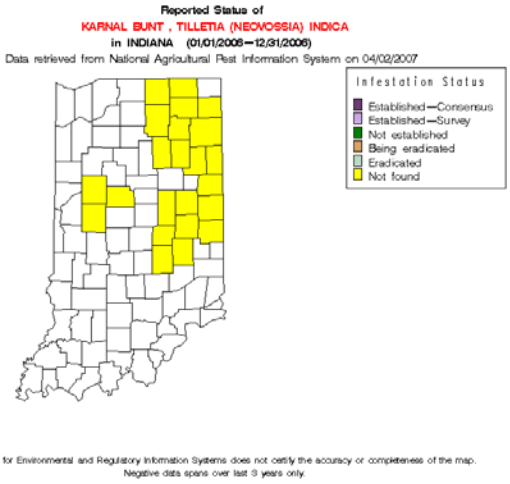
In Late June 2006, Indiana DNR - Div. of Nature Preserves surveyed for giant hogweed in Indiana. Indiana Department of Natural Resources – Division of Nature Preserves confirmed the second location for giant hogweed, *Heracleum mantegazzianum*, in Indiana found near Lakeville (St. Joseph County). This 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. Eradication of both giant hogweed sites is ongoing.



2006 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 2006, 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 23 different counties in Indiana which include: Adams, Allen, Clinton, DeKalb, Delaware, Elkhart, Hancock, Henry, Huntington, Jay, Kosciusko, La Grange, Madison, Montgomery, Noble, Randolph, Rush, Shelby, Tippecanoe, Wabash, Wayne, Wells, and Whitley.



2006 Indiana Kudzu Eradication Project
Kenneth W. Cote
Indiana Department of Natural Resources,
Division of Forestry & Division of Entomology & Plant Pathology

Kudzu is a woody, perennial vine that has trifoliate leaves with pubescent stems. It is often confused with wild grape, wild cucumber and greenbriar. However, these plants have a simple leaf, not a compound leaf comprised of 3 leaflets. Kudzu vines can cover trees and all other vegetation creating a monotypic landscape. This visible damage is not the only damage it can cause. It is a know host of soybean rust which is a fungus that can have a significant economic impact on Indiana's soybean crop. Kudzu has been identified in 35 Indiana counties and covers more than 100 acres of the state. It has proven to be very resistant to the cold weather and populations have been confirmed in the counties bordering Michigan.

Control of kudzu usually involves a combination of mechanical and chemical strategies. Numerous biological control agents including insects, bacteria and fungi, have been studied. However none of these agents are commercially available because they all have a negative effect on soybeans. Mechanical control is usually not successful since kudzu has a large root system and stored food reserve. Chemical applications are really the only means to eradicate kudzu and are most effective when conducted in August or September. Some of the chemicals that are labeled for kudzu control include clopyralid, dicamaba, glyphosate, metasulfuron methyl, picloram, sulfumeteron methyl, tebuthiuron, and triclopyr. The Indiana DNR, Division of Entomology and Plant Pathology is relying primarily on clopyralid and glyphosate for kudzu control since many of the control activities are occurring on private land where tree preservation is desired by the property owner.

As with any project, there are a number of difficulties that can be encountered. Site accessibility, high soil erosion potential and the close proximity of water to certain sites are the most significant problems encountered so far in the project. Many of the sites are difficult to access and can only be entered by foot. There is even one site that is only accessible by boat or helicopter. The close proximity of water to the sites will also play a major role in dictating the type of control tactics can be used to eradicate kudzu sites.

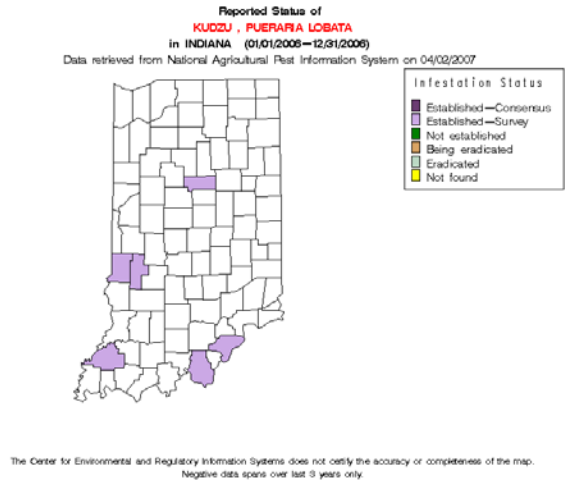
Problems such as high erosion potential and site accessibility increase the cost of eradicating kudzu. Currently, using subcontractors, kudzu eradication cost $1,500 per acre per application or about $5,000 per acre for total removal, excluding any work for erosion prevention activities. Most of the costs are incurred through time and labor expenses. Depending on the terrain, a two person control can treat approximately a half acre per hour. However, some of our large sites with high erosion potentials may cost as much as a $150,000 dollars to eradicate due to the expense of erosion prevention activities.

During the last 4 years, The Indiana DNR, Division of Entomology and Plant Pathology has identified and contacted landowners with kudzu on their property as well as respective county extension agents. Inventories of the major plant species and an environmental assessment have been conducted at identified sites and all sites have been mapped on an Arc View database. We have also been working with soil erosion specialist to develop soil erosion plans for kudzu removal at problematic sites. The Indiana DNR, Division of Nature Preserves has been providing information about endangered species near kudzu sites. This environmental information is used to determine an action plan for individual sites.

Treatment activities conducted by the Indiana DNR, Division of Entomology and Plant Pathology began

in September of 2006. Twelve sites over a nine county area were treated with primarily high volume, low concentrations of clopyralid and cut stump applications of glyphosate. All sites responded to the applications expect one which appeared to be showing resistance. Investigation of new kudzu site reports is on going and we are continuing to work with landowners that want to perform their own eradication work. Part of this landowner cooperation involves a cost share program set up through the USDA NRSC in which the DNR and Purdue University provides technical support for landowners.

Kudzu is a major problem in Indiana, but it is still at a controllable size. Most sites are less than one acre making them easy to eradicate. However, we do have several sites that are nearly 10 acres with high erosion potentials and serious accessibility problems. Eradication at such sites may be cost prohibitive. A single site may take 3-5 years to control. Persistence is the key to successful control of kudzu and the DNR is expected this project to take 10-15 years be successful.



2006 Indiana Pine Shoot Beetle Survey

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

In 2006, PPQ targeted 80 lindgren funnel traps baited with Alpha pinene or a combination of Alpha pinene and trans-verbenol for Pine Shoot Beetle. Traps were placed in Sullivan, Clay, Greene, Lawrence, Jackson, Scott, Clark, Jefferson, Switzerland and Ohio Counties which are located in Southern Indiana along the leading edge of the regulated area. The traps were placed in locations with high concentrations of host material in mid February and were removed in early June. PPQ did not detect *Tomicus piniperda* during 2006. The PSB trap catches were also examined for other exotics. In the future, Indiana PPQ will continue targeting this exotic species.