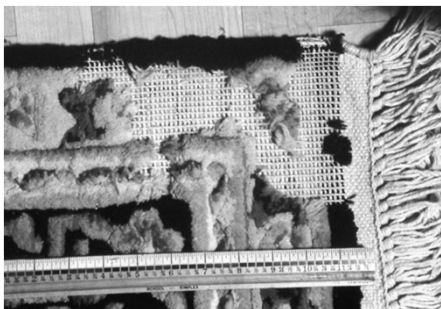


## IPM in Museums



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## Integrated Pest Management IPM

- What makes a pest a pest?
- When it causes:
  - Measurable Economic Loss
  - Aesthetic loss
  - Physical Health Issues (Disease, respiratory issues)
  - Mental Health Issues (Fear, stress, mental anguish)



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## History of Pest Management

- World War II introduced new organic compounds
  - Carbamates
  - Organophosphates
  - Organochlorines (DDT)



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## A Reliance on Chemicals

Late 1940's to Mid 1960's

- The discovery of synthetic organic compounds was considered a major advancement of mankind.
- Crop Production on a large scale, with little or no pest damage was possible
- Pesticides were cheap, effective, persistent over time and killed a broad spectrum of insects



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## A Voice of Reason



- In 1962, Under constant criticism from agricultural leaders and chemical manufacturers, Rachel Carson wrote the book, Silent Spring
- This eventually led to the formation of the EPA in 1970

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## IPM



IPM = Combining Cultural, Physical, Biological and Chemical tools to prevent or reduce pest activity.

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## How Can We Implement IPM at Our Museum??



- Let's start with the pieces of the IPM puzzle

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## IPM



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## Choose a Team Leader

- Manager must have:
  - Budget
  - Authority
  - Some Expertise
- Team must understand:
  - Methods
  - Benefits
  - Acceptable Threshold for Institution



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## Education, Education, Education Start With The Insects



- Pest Identification
- Knowledge of tools
- Knowledge of collection materials

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## Clothes Moths

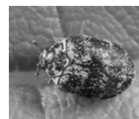


Webbing Clothes Moth *Tineola bisselliella*

Casemaking Clothes Moth *Tinea pellionella*

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## Carpet Beetles



Museum Beetle  
*Anthrenus museorum*



No Common Name  
*Anthrenus fuscus*



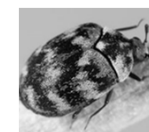
Vodka Beetle  
*Attagenus smaragdinus*



Black Carpet Beetle  
*Attagenus unicolor*

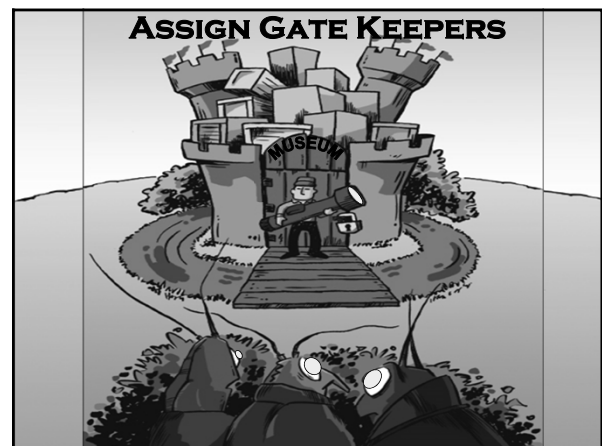
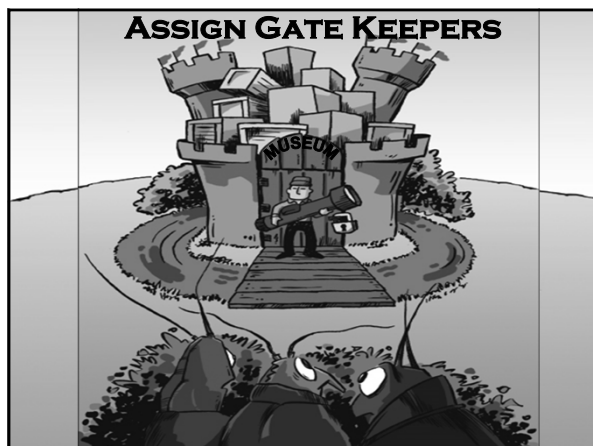
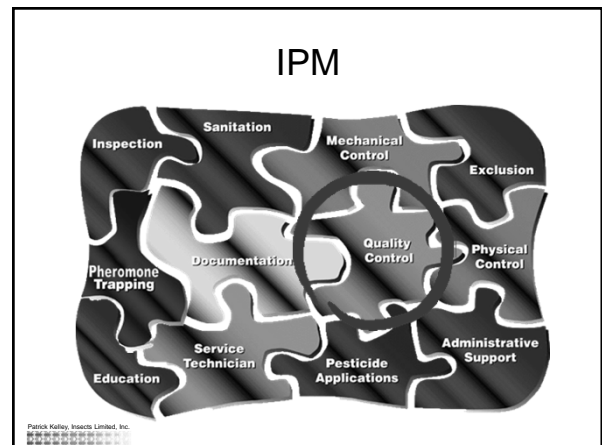
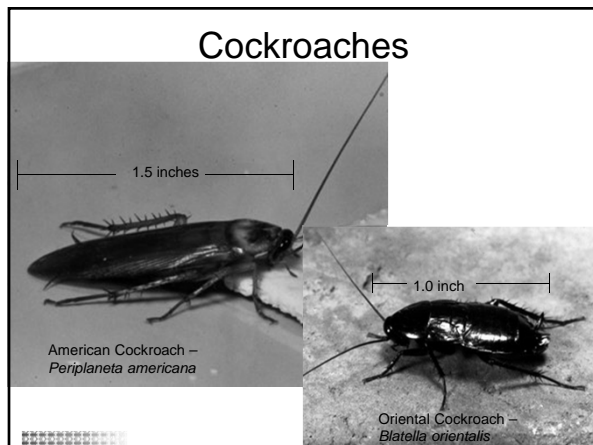
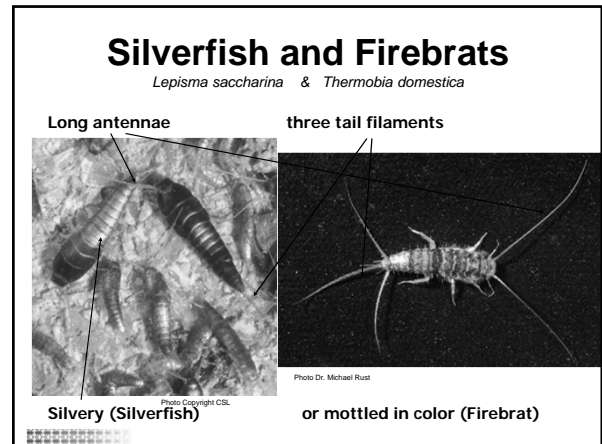
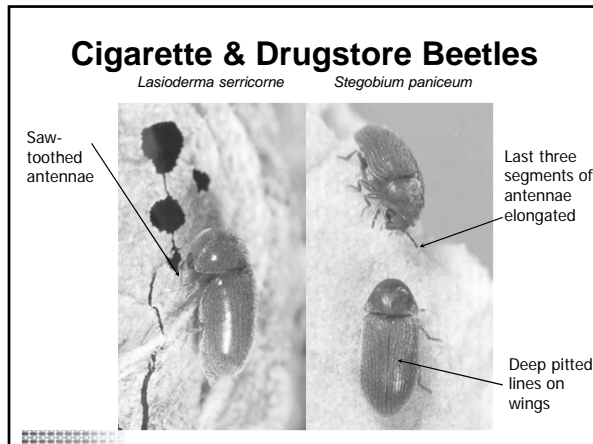


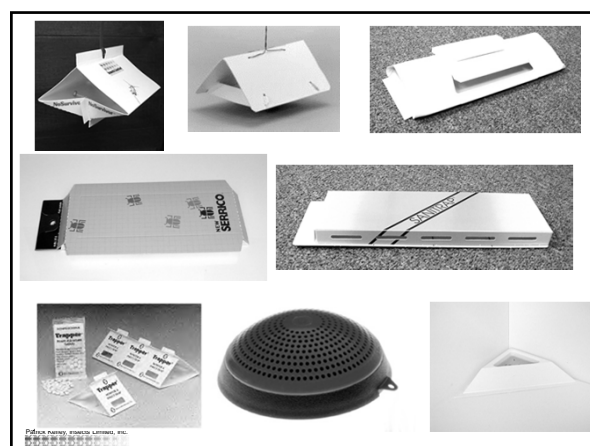
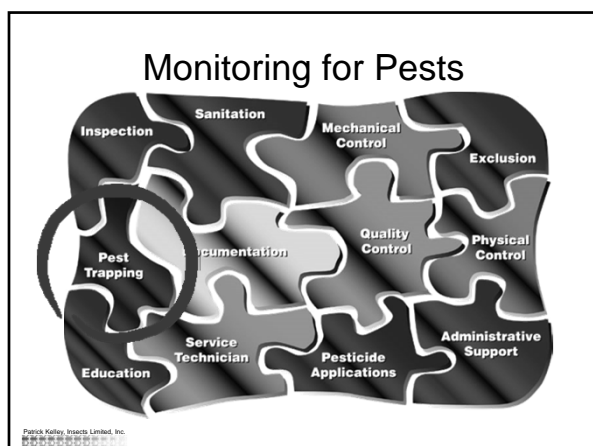
Common or Buffalo Carpet Beetle  
*Anthrenus scaphulariae*



Varied Carpet Beetle  
*Anthrenus verbasci*

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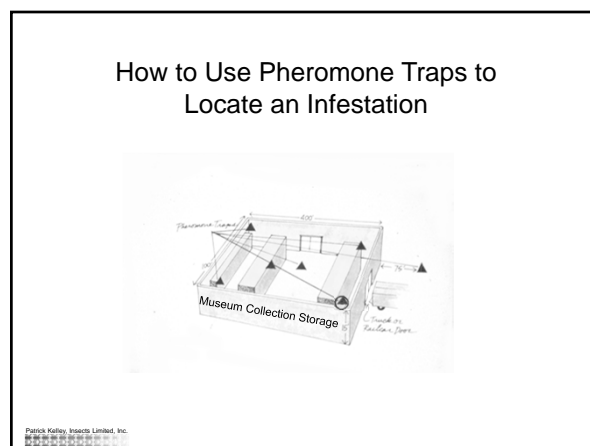
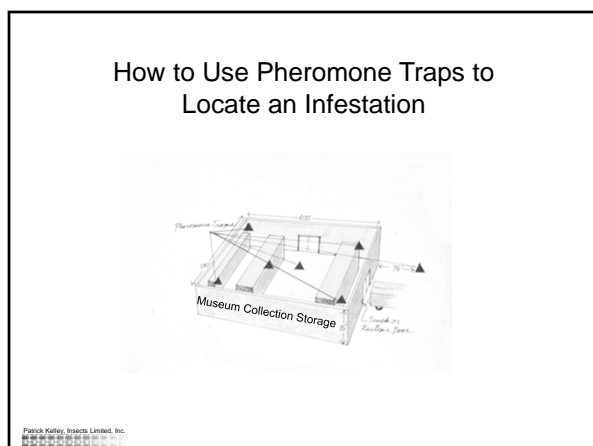
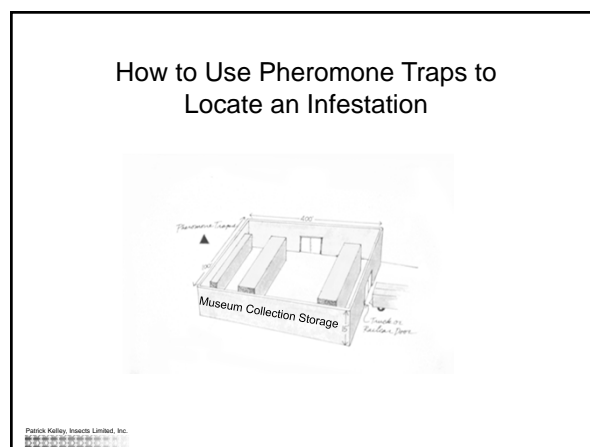


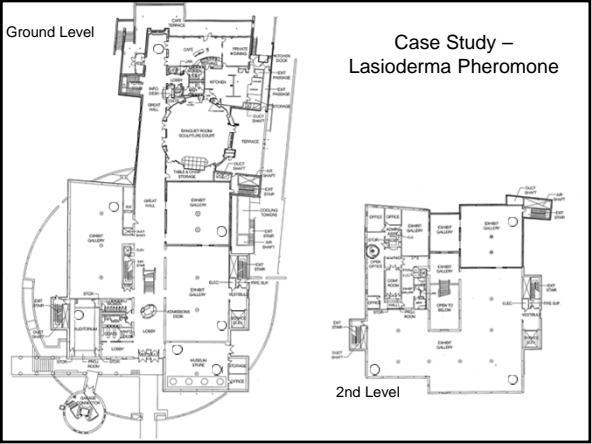
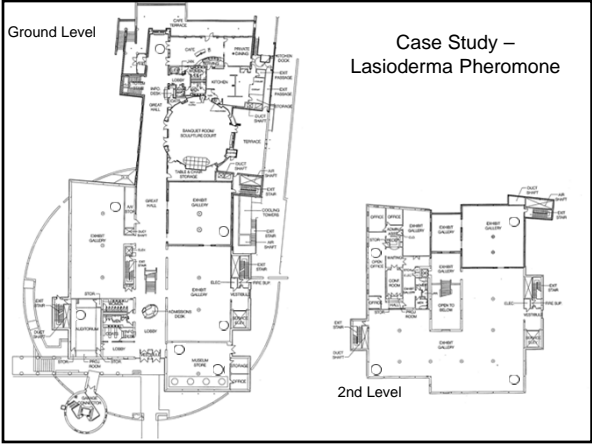
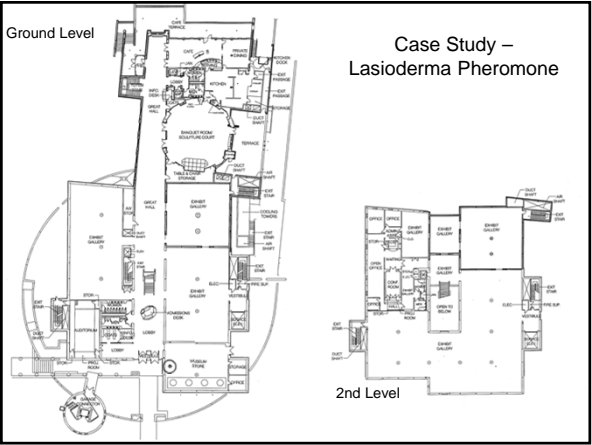
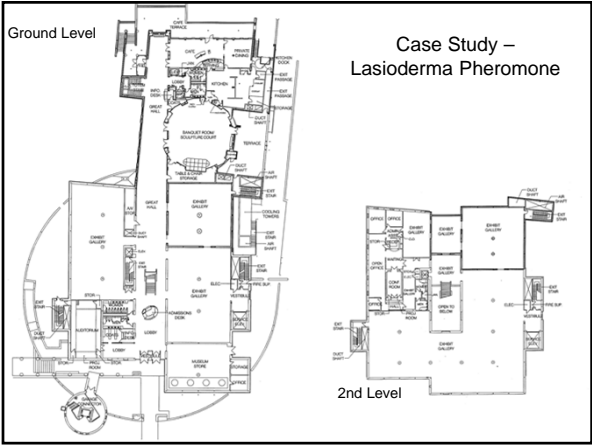


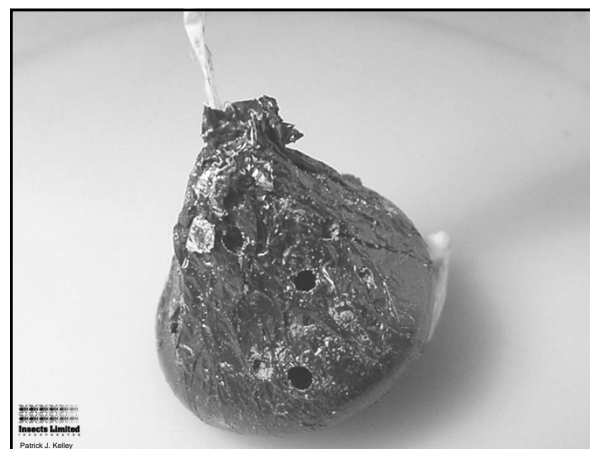
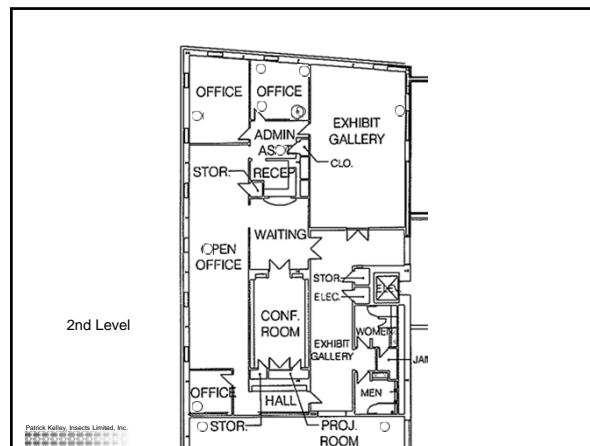
### Focus on Riskiest Items

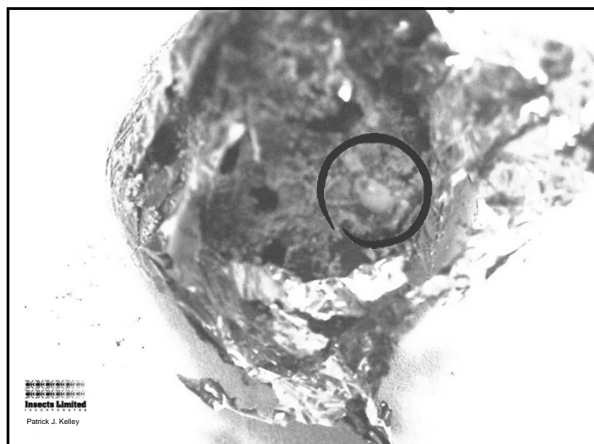
- Fur
- Feathers
- Wool
- Silk
- Insect Specimens
- Parchment & Velum
- Papier Mache
- Animal Skins
- Books composed of these materials
- Dried Plants and Seeds
- Sapwood
- Any Damp Organic Material

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- A Single Piece of Chocolate accounted for more than 30 adult cigarette beetle in the museum



### Pay Special Attention to Museum Stores and Restaurants



### Environmental Monitoring



- Insects generally prefer tropical environments

### IPM Program Components

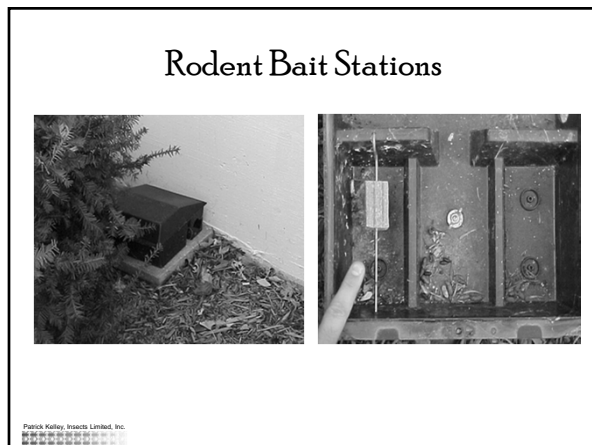
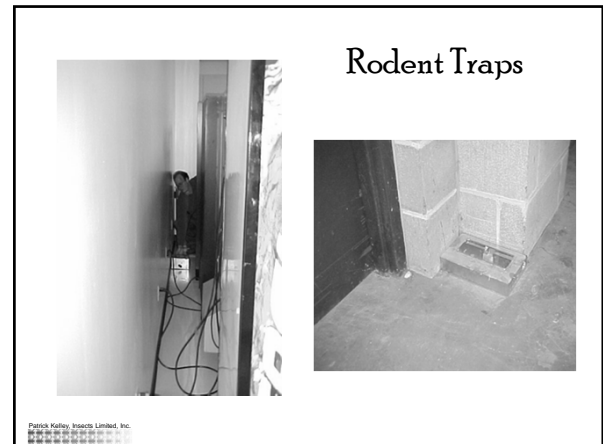
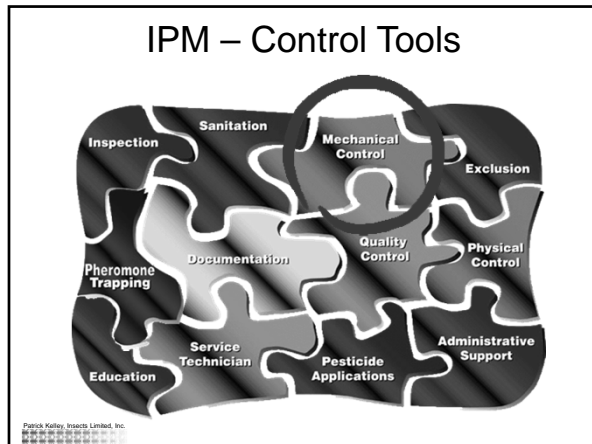
- **Good house-keeping/Sanitation:** producing an environment inhospitable to pests



### Sanitation

- Scheduled Cleaning
- Look for and Recognize Signs of Pest Activity
- People Issues

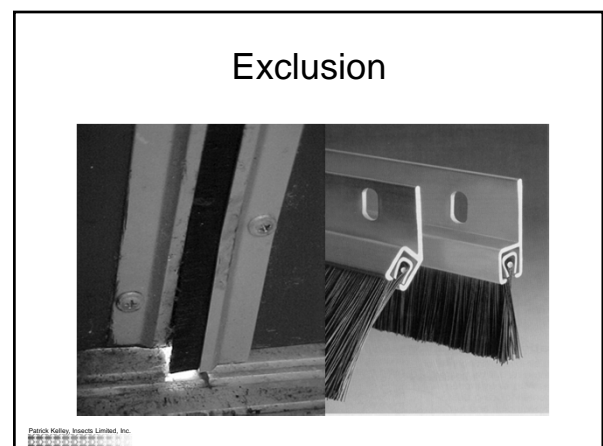
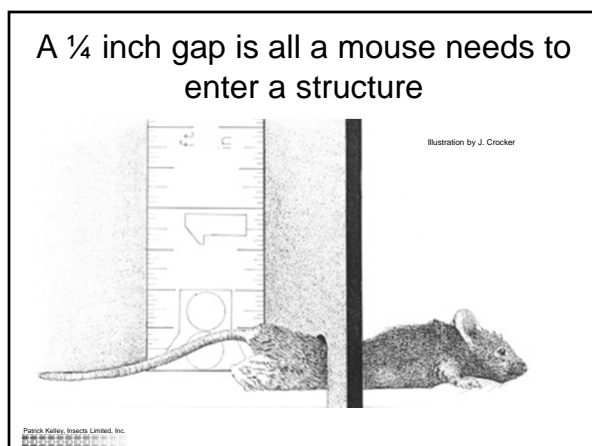




### IPM Program Components

- Integrity of building (excluding pests)
- **Habitat modification** - depriving pests of their optimal environment

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## Exclusion



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## IPM Program Components

### • Identification & Documentation -



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## IPM Program Components

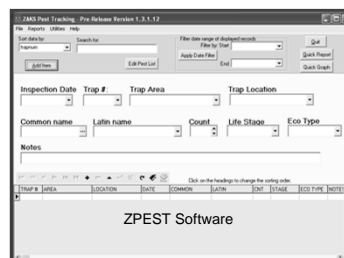
### • Identification & Documentation



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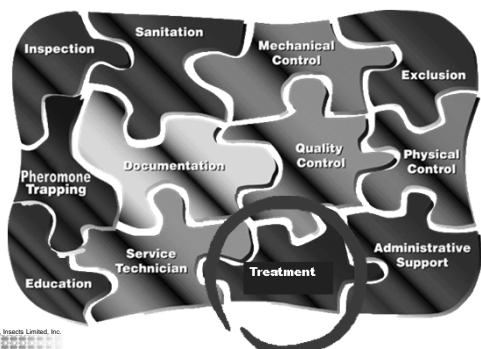
## IPM Program Components

### • Identification & Documentation



Free documentation software for entering pest data can be found at [www.museumpests.net](http://www.museumpests.net) under the monitoring tab

## Treating for Pests



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## Treatment Options

- Disposal of Infested Material
- Physical Removal of Infestation
- Freeze "em or Fry "em
- Anoxia
- CO<sub>2</sub>
- Nitrogen
- Traditional Fumigants
- Other



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## Finally Be Creative in Your Approach

- Don't be afraid to change the program to better suite the needs of your institution
- Make it Fun - when possible

## Contact

- Patrick Kelley
- Vice President
- Insects Limited, Inc.
- 16950 Westfield Park Road
- Westfield, IN 46074 USA
- [P.kelley@insectslimited.com](mailto:P.kelley@insectslimited.com)
- Phone: 317-896-9300

