



---

**PITTSBURGH ZOO  
& PPG AQUARIUM**

**It's a Pest's Life**  
**Grades 5 - 8**  
**Teacher Packet**

**Contents:**

1. Background Information
2. Vocabulary
3. Internet Resources
4. Pre-Visit Activity
  - You Be the Pest!
  - Pest Management Methods Worksheet
5. In-Zoo Activity
  - IPM Scavenger Hunt
6. Post-Visit Activity
  - IPM Jeopardy
7. Related Activities



## Background Information

### WHAT IS IPM?

There is a delicate balance between protecting our children and other school occupants from unnecessary exposure to pesticides and protecting them from the health risks associated with pest organisms. It is to everyone's advantage to protect and maintain indoor air quality and a healthy environment as children may be more sensitive to environmental health threats. Integrated Pest Management (IPM) looks at pest problems using a multi-tactic approach. It considers all aspects of the interactions between people and the pest to find the easiest way to resolve the pest problem with the lowest overall risk to people's health and the school environment. IPM looks beyond exterminating the pest and the use of preventative regularly scheduled pesticide applications. IPM considers factors that allow pests to become problems in the first place and uses a combination of cultural, physical, biological, and chemical pest management strategies.

The most important strategy is communication and cooperation among school officials, teachers, staff, custodians, and parents. How people use and manage a school determines the pest problems that will occur. IPM emphasizes regular inspections and monitoring to detect pests before they become a problem, making it easier to manage them in less toxic ways. Inspections, information on the pest's life cycle, setting action thresholds, and information on how the school facility is used determine when and what action is taken. IPM's flexibility to adapt to any pest problem is what makes it work. IPM does not rule out the use of pesticides. Pesticide use is weighed against other less toxic and more permanent methods.

### WHY IPM?

A school is a difficult place to practice pest management. The design and use of school buildings and landscapes may encourage pest problems. Schools also operate on tight budgets and have to craft policies which incorporate a diversity of people and opinions. Only by looking beyond pest extermination and routine pesticide applications can pesticide exposure to users of schools be reduced. The benefits and barriers to the use of IPM are:

#### BENEFITS:

- Provides long term results
- Environmentally friendly
- Reduces unnecessary chemical use and its liability
- Reduces risk of pesticide resistance
- Proactive, not reactive
- Detects a potential pest problem before it's a major problem
- Provides a written record of pest activities and control actions
- Promotes a better school/community relationship
- Site-specific

#### BARRIERS

- May be more expensive to implement- especially when first starting IPM
- Requires everyone, even students, to take an active role
- Requires more skill and knowledge than traditional pest control
- Additional paperwork and communication
- May require on-going training
- Requires persistent attention

## **WHY SHOULD YOUR STUDENTS LEARN ABOUT IPM?**

Although more pesticides are used on farms than in homes, excessive exposure to pesticides usually occurs in homes. As a result, it is important for students to learn how to safely implement IPM at home.

IPM is a perfect opportunity for students to learn and practice problem-solving and reasoning skills. It is an applied use of math, biology, ecology, economics, and chemistry knowledge. It is quickly becoming a major field of study and work in the United States.

In the agricultural science curriculum, IPM is a critical component; IPM is being adopted in almost all areas of agriculture, from crop and livestock production to food processing, shipping and storage.

## **CLASSROOM IPM**

Because IPM is gaining increased acceptance, local growers or organizations using IPM may be available as resources to teachers. They may be willing to host a field trip or appear as guest speakers in your classroom. Also, IPM is being used by some school districts because of concern for children's exposure to chemical pesticides. This provides a great opportunity for students to get involved in a real life IPM project. Have the maintenance person in charge of your building's IPM program come and talk to your class about the IPM program for the school. Give students the opportunity to participate in scouting activities. Create a student IPM patrol in which students keep an eye out for pest-encouraging situations (like food in the classrooms) and work to eliminate pest feeding and breeding grounds in the school. Both students and maintenance staff will benefit from such an arrangement- giving students real-world, hands-on experiences, and giving maintenance staff extra scouting eyes and buy-in into their IPM program. Another important opportunity with IPM is the inter-disciplinary nature of the subject. IPM involves science, economics, communication, history, biology, ecology, and business. IPM is a chance for teachers from a variety of disciplines to work together to create a cohesive, meaningful unit of study for their students.

## **THE FOUR BASIC IPM COMPONENTS**

### **1. MONITORING**

IPM is based on consistently inspecting and monitoring for pests to determine the location and degree of infestation. Monitoring includes traps, visual inspections, and interviews with staff members, and can be incorporated into other activities such as cleaning. Proper identification of the pest is critical to gathering information about the pest's life cycle and habits. Identification is essential for selecting the combination of strategies which will be most effective and knowing when to implement them. Map out and prioritize problem areas. Take thorough notes to help you determine what to do now and in the future.

### **2. SETTING ACTION LEVELS**

School officials must set thresholds to determine if and when action should be taken against a certain pest. The action level is the number of pests that can be tolerated before treatment is necessary. While health concerns are always most important for determining the action threshold, economic and aesthetic factors cannot be ignored. An example of an action threshold would be detecting one mouse. Because mice can pose a significant health threat, action should be taken immediately. In other words, one mouse is too many.

### 3. APPLYING IPM STRATEGIES

IPM employs a multi-tactic approach, integrating several strategies to combat a particular pest. Criteria for selecting a treatment strategy are:

- a. Least hazardous to human health
- b. Least disruptive to natural controls
- c. Least toxic to non-target organisms
- d. Most likely to be permanent
- e. Easiest to carry out safely and effectively
- f. Most cost-effective
- g. Most site-appropriate

There are four common types of control strategies that remove a pest's food, water, and shelter, and limit its access into and throughout buildings and on school grounds.

- a. Cultural control is a preventative measure using fertilization, plant selection, and sanitation to exclude problematic pests and weeds.
- b. Physical control, or pest exclusion is another preventative strategy. It includes creating barriers; modifying conditions such as temperature, light and humidity; trapping; and manually weeding.
- c. Biological control makes use of a pest's natural enemies. This strategy introduces beneficial insects or bacteria to the environment or, if they already exist, provides them with the necessary food and shelter and avoids using broad-spectrum chemicals that will inadvertently kill them.
- d. Chemical control is used after all other control strategies are deemed inappropriate or ineffective. Target-specific, low-toxicity pesticides should be applied in a manner that will maximize the effectiveness of pest management and minimize the exposure to humans and other non-target species. Spot treat if possible to reduce exposure.

### 4. EVALUATION

Program evaluation involves reviewing and monitoring data, actions taken, treatment impacts and effectiveness, and any other relevant observations. These reports will provide information on previous and current pest populations and which strategies were applied. Comparing data will clearly indicate which pest management strategies were most effective for the amount of time and money spent. IPM practices and procedures can be modified, if necessary, based on past experience, results, and gained knowledge. Ask yourself questions about the program.

- Was the treatment effective?
- What were the effects on non-target species?
- What worked and what did not?
- What can I do differently next time?
- Should I consult an outside source of expertise for further IPM recommendations?
- Is the program compatible with current public expectations?

Remember, be flexible! The key to a good IPM program is adaptability and allowing for continuous fine-tuning in your program. Keeping other school personnel informed and involved will help make them aware of the school's IPM program and its advantages.

This fact sheet includes information first published from the Minnesota Department of Agriculture and the Penn State Department of Entomology.

## Internet Resources

**The Pennsylvania Integrated Pest Management Program:**

<http://paipm.cas.psu.edu>

**Integrated Pest Management for Iowa Schools:**

<http://school.ipm.iastate.edu>

**Environmental Protection Agency's IPM website:**

<http://www.epa.gov/pesticides/ipm/>

**Penn State's Insect Olympics:**

<http://entscied.cas.psu.edu/Olympics.html>

**Juniata College's Invasive Plants Resource Guide:**

<http://www.projects.juniata.edu/ess300/Invasives/index.html>

**University of Kentucky's Katerpillars and Mystery Bugs:**

<http://uky.edu/Agriculture/Entomology/ythfacts/entyouth.htm>

**USDA Integrated Pest Management:**

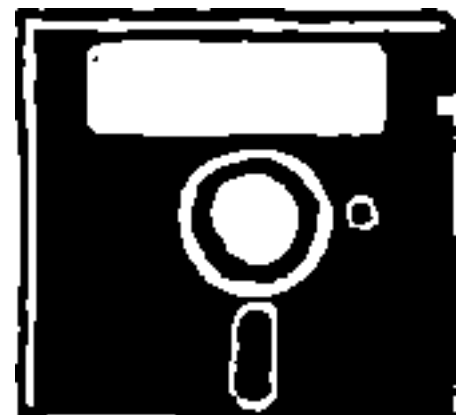
<http://www.csrees.usda.gov>

**Insects in the Classroom: Bugs as Teaching Tools:**

[http://entowww.tamu.edu/academic/ucourses/ento489/lesson\\_plans.html](http://entowww.tamu.edu/academic/ucourses/ento489/lesson_plans.html)

**Pennsylvania Department of Environmental Protection:**

<http://www.dep.state.pa.us>



# You Be the Pest!

## Pest Management Methods

### Integrated Pest Management Workshop

#### **OBJECTIVES:**

- TSW become familiar with the uses and effectiveness of mechanical methods of pest management.
- TSW become familiar with the uses and effectiveness of chemical pesticides on pest management.
- TSW become familiar with the uses and effectiveness of biological methods of pest management.
- TSW compare and contrast the benefits and disadvantages of the three methods of pest management.
- TSW be able to graph the changes in pest populations with each method of pest management- chemical, biological, and mechanical.

#### **MATERIALS:**

- White Poker Chips- lettered A, B, C, D.
- Red Poker Chips- lettered A, B, C, D.
- Blue Poker Chips- lettered A, B, C, D.
- Dry erase board with markers
- IPM Methods Worksheets

### Mechanical Pest Management:

#### **ANTICIPATORY SET:**

Distribute poker chips throughout an open area or room. Be sure to have at least 4 white, 4 red, and 4 blue for each student. Most of these chips should be lettered “C”, and “D”. You should include one “A” and one “B” chip per student. For example, there are 10 kids in your class. That would mean that out of the 120 poker chips (40 white, 40 red, and 40 blue), 10 would have an “A” and 10 would have a “B”.

These chips will serve as our food.

Ask the students for terms that describe the word “pest”. Place the terms on the dry erase board. Ask the students to think of some common pest species.

Ask the students to come up with some ways to control the pests. Identify the methods as being either ‘m’ mechanical, ‘c’ chemical, or ‘b’ biological.

### Specific Examples of Each Method:

#### **Mechanical Methods**

Trapping  
Fences  
Habitat modification  
Shooting  
Frightening

#### **Chemical Methods**

Toxicants  
Fumigants  
Repellents

#### **Biological Methods**

Releasing Predators  
Habitat Modification

Tell the students that today they are going to participate in an activity in which they are the pest species (rats), and I am the pest manager. My preferred method of pest control for the next several months will be physical methods (rat traps). Let’s see how well I control the rat population.

### DEVELOPMENT OF THE LESSON:

1. Instruct the students to gather as much food as they can. They will have 15 seconds (one month), at which time they will have to quit picking up chips and return to their seats. Their goal will be to gather at least 6 chips, while avoiding the rat traps, to avoid starving.
2. Tell the students that although the food looked very tasty, all chips labeled with an “A” happened to be food that was placed on a rat trap. Have students raise their hands if they were “trapped”. Put the number of trapped rats on the dry erase board. Next, count the number of students who received a total of six or more chips that were not trapped; they survived the month.
3. Mark on the dry erase board how many rats survived the month.
4. Repeat this process for two more months. Note: Everyone participates in every month. Therefore, we will start with the same number of rats each month.
5. For months four, five, and six, chips labeled with an “A” or a “B” now become traps. Don’t give this information to the students until AFTER month four.
6. (Optional) For months seven, eight, and nine, chips labeled with an “A”, “B”, and “C” become traps. Don’t give this information to the students until after month seven.

Month	Rat Traps	Likely Effect on Rat Population
1-JAN	A	Small decrease
2-FEB	A	Very small decrease
3-MAR	A	No decrease
4-APR	A, B	Small decrease
5-MAY	A, B	Very small decrease
6-JUN	A, B	No decrease
7-JUL	A, B, C	Small decrease
8-AUG	A, B, C	Very small decrease
9-SEP	A, B, C	No decrease

#### Questions for Discussion (after months 1, 2, 3):

1. What happened to the pest population as the months increased? Why?
2. How did you adapt your behavior to ensure survival?

#### Questions for Discussion (after months 4, 5, 6):

1. What happened to the pest population as the months increased? Why?
2. What decisions did you have to make in order to survive each of these months?

#### (Optional) Questions for Discussion (after months 7, 8, 9):

1. What happened to the pest population as the months increased? Why?
2. What decisions did you have to make to ensure survival?

## Chemical Pest Management:

### ANTICIPATORY SET:

Distribute poker chips throughout an open area or room. Be sure to have at least 4 white, 4 red, and 4 blue for each student. These chips will serve as food.

Tell students that again you are the pest manager, and again they are the pests. However, this time they are going to be mosquitoes. For the next nine months, my preferred method of pest control will be the use of chemical pesticides.

Review examples of chemical pesticides.

### DEVELOPMENT OF THE LESSON:

1. Instruct the students to gather as much food as they can. They will have 15 seconds (one month), at which time they will have to quit picking up chips and return to their seats. Their goal is to pick up at least 6 chips to avoid starving, while at the same time avoiding chemical pesticides.
2. Tell the students that the blue chips and white chips are food, and red chips are chemical pesticides. Have students raise their hands if they collected two or more chemical pesticides (red chips). These 'pests' did not survive the harmful effects of the pesticides. List the number of mosquitoes that died. Students who received a total of six or more blue and white chips survived the month (*this does not include those who did not survive the pesticides*)
3. Mark on the dry erase board how many pests you had at the end of the month.
4. Repeat this process for three more months.
5. Substitute blue chips as pesticides for months four, five, and six. Red and white chips are now food.
6. For months seven, eight, and nine, have both red and blue chips be pesticides.

Month	Chemical Pesticides	Likely Effect on Mosquito Population
1-JAN	Red	Large decrease
2-FEB	Red	Small decrease
3-MAR	Red	No decrease
4-APR	Blue	Large decrease
5-MAY	Blue	Very small decrease
6-JUN	Blue	No decrease
7-JUL	Red, Blue	Large decrease
8-AUG	Red, Blue	No decrease
9-SEP	Red, Blue	No decrease

#### Questions for Discussion (after months 1, 2, 3):

1. What happened to the pest population as the months increased? Why?
2. How did you adapt your behavior to ensure survival?

#### Questions for Discussion (after months 4, 5, 6):

1. What happened to the pest population as the months increased? Why?
2. What decisions did you have to make in order to survive each of these months?

#### Questions for Discussion (after months 7, 8, 9):

1. What happened to the pest population as the months increased? Why?
2. What decisions did you have to make to ensure survival?

## Biological Pest Management:

### ANTICIPATORY SET:

Distribute poker chips throughout an open area or room. Be sure to have at least 4 white, 4 red, and 4 blue for each student. These chips will serve as food.

Tell students that again you are the pest manager, and again they are the pests. However, this time they are going to be aphids. For the next nine months, my preferred method of pest control will be using a biological method to control your species. In this case, I will be releasing ladybugs, which are more than ready to make a meal out of you!

Review examples of biological methods of pest control.

### DEVELOPMENT OF THE LESSON:

1. Instruct the students to gather as much food as they can. They will have 15 seconds (one month), at which time they will have to quit picking up chips and return to their seats. Their goal is to pick up at least 6 chips to avoid starving, while at the same time avoiding the predatory ladybugs.
2. Tell the students that ladybugs were waiting for them as they picked up any of the white chips lettered 'C' or 'D'. These aphids have become the tasty treat of the ladybugs. Have students raise their hands if they were eaten by a ladybug. Mark this number on the dry erase board. Students who received a total of six or more blue and white chips survived the month (this does not include those who did not survive the ladybugs).
3. Mark on the dry erase board how many aphids survived to the end of the month.
4. For month two, substitute blue chips as ladybugs.
5. For months three and four, substitute chips lettered 'A' and 'B' as ladybugs.
6. For month five, substitute red chips as ladybugs.
7. For month six, substitute white chips as ladybugs.
8. For month seven, substitute chips lettered 'C' as ladybugs.
9. For month eight, substitute blue chips as ladybugs.
10. For month nine, substitute chips lettered 'D' as ladybugs.

Month	Predators	Likely Effect on Aphid Population
1-JAN	White	Very large decrease
2-FEB	Blue	Very large decrease
3-MAR	A, B	Very large decrease
4-APR	A, B	Very large decrease
5-MAY	Red	Very large decrease
6-JUN	White	Very large decrease
7-JUL	C	Very large decrease
8-AUG	Blue	Very large decrease
9-SEP	D	Very large decrease

### Questions for Discussion (after months 1, 2, 3):

1. What happened to the pest population as the months increased? Why?
2. How did you adapt your behavior to ensure survival?

**Questions for Discussion** (*after months 4, 5, 6*):

1. What happened to the pest population as the months increased? Why?
2. What decisions did you have to make in order to survive each of these months?

**Questions for Discussion** (*after months 7, 8, 9*):

1. What happened to the pest population as the months increased? Why?
2. What decisions did you have to make to ensure survival?

**General Culminating Questions for Discussion:**

1. What are some of the positives and negatives in using mechanical methods of pest control?
  2. What are some of the positives and negatives in using chemical methods of pest control?
  3. What are some of the positives and negatives in using biological methods of pest control?
-

## Integrated Pest Management- Methods

<p><b>Mechanical Methods</b></p> <p><b>Types:</b></p>		<p><b>Chemical Methods</b></p> <p><b>Types:</b></p>		<p><b>Biological Methods</b></p> <p><b>Types:</b></p>	
<p><b>Benefits:</b></p>	<p><b>Disadvantages:</b></p>	<p><b>Benefits:</b></p>	<p><b>Disadvantages:</b></p>	<p><b>Benefits:</b></p>	<p><b>Disadvantages:</b></p>

## Mechanical Methods-The Rats and the Rat Traps!

Month	Trapped Rats	Survivors!
January		
February		
March		
April		
May		
June		
July		
August		
September		

## **Chemical Methods-The Mosquitoes and the Pesticides!**

<b>Month</b>	<b>Affected by Pesticides</b>	<b>Survivors!</b>
<b>January</b>		
<b>February</b>		
<b>March</b>		
<b>April</b>		
<b>May</b>		
<b>June</b>		
<b>July</b>		
<b>August</b>		
<b>September</b>		

## **Biological Methods-The Aphids and the Ladybugs!**

<b>Month</b>	<b>Predated by Ladybugs</b>	<b>Survivors!</b>
<b>January</b>		
<b>February</b>		
<b>March</b>		
<b>April</b>		
<b>May</b>		
<b>June</b>		
<b>July</b>		
<b>August</b>		
<b>September</b>		

## IPM Scavenger Hunt

1. Find four examples of bait stations in the zoo. List location and brief description including what pest it is used for. (8 points)

1. \_\_\_\_\_ 2. \_\_\_\_\_  
3. \_\_\_\_\_ 4. \_\_\_\_\_

2. Find four owl boxes in the zoo. Describe their locations. (4 points)

1. \_\_\_\_\_ 2. \_\_\_\_\_  
3. \_\_\_\_\_ 4. \_\_\_\_\_

3. Count the number of mallard ducks in the:

1. Flamingo exhibit. (1 point)  
2. Ponds in the Savanna exhibit. (1 point)  
3. Ponds in the Giraffe exhibit (across from TFC). (1 point)

4. In all exhibits find two other non-exhibit bird species that can be considered pests. (2 points)

1. \_\_\_\_\_  
2. \_\_\_\_\_

5. After being labeled a pest by the Chinese government, this animal was hunted unmercifully during the 1960's and 1970's. They have now been extirpated from much of China. The Pittsburgh Zoo & PPG Aquarium houses the largest sub-species of this animal. (2 points)

6. The planet's largest monkey is endangered and is capable of destroying large amounts of farmland overnight. Living in troops makes this monkey vulnerable to mass poaching. (2 points)
7. List three reasons why African elephants could be considered pests. (3 points)
1. \_\_\_\_\_
  2. \_\_\_\_\_
  3. \_\_\_\_\_
8. The African tsetse fly is most commonly known for transmitting this terrible disease. (2 points)
9. List five potential pest management issues that could occur in the concession areas throughout the Zoo. (5 points)
1. \_\_\_\_\_
  2. \_\_\_\_\_
  3. \_\_\_\_\_
  4. \_\_\_\_\_
  5. \_\_\_\_\_
10. When prime food types such as fruits, nuts, plants, and insect larvae are limited, this large mammal may turn to garbage dumps, bird feeders, livestock feeding stations, farm crops, campgrounds, and commercial bee huts to find food. (2 points)
11. Find the non-native fish species that has out-competed its native Pennsylvania cousins. (2 points)
12. Find a large amphibian in the aquarium that is very common in Pennsylvania but considered a pest species in some Western states. (2 points)
13. Foxes, feral cats, rabbits, cane toads, horses, camels, pigs, buffalo, donkeys, and goats are considered the primary non-native pests of which continent? (2 points)



14. Name four animals from the Worlds of Discovery building that naturally eliminate pests. (8 points)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

15. Although protected by the Argentinian government, the South American variety of this animal continues to be considered a pest by fishermen throughout its range. The Pittsburgh Zoo & PPG Aquarium exhibits the California variety. (2 points)

16. It is estimated that 10,000 of these animals are killed on Pennsylvania's portion of Interstate 80 each year. That is an amazing statistic, considering the fact that they were nearly extirpated from the Commonwealth in the early 1900s. (2 points)

17. More than 8,000 of these Australian mascots are killed annually by cars, resulting in nearly \$15 million worth of damage. (2 points)

## IPM Scavenger Hunt Answer Key

1. Find four examples of bait stations in the zoo. List location and brief description including what pest it is used for. (8 points) **Bait stations are used for rodents - locations will vary**
2. Find four owl boxes in the zoo. Describe their locations. (4 points)
  1. **Research/Graphics area**
  2. **Giraffe, Muntjac area**
  3. **Elephants**
  4. **Kids Kingdom**
3. Count the number of mallard ducks in the:
  1. Flamingo exhibit. (1 point) **Number will vary**
  2. Ponds in the Savanna exhibit. (1 point) **Number will vary**
  3. Ponds in the Giraffe exhibit (across from TFC). (1 point) **Number will vary**
4. In all exhibits find two other non-exhibit bird species that can be considered pests. (2 points)  
**Pigeons, Peacocks, Crows, Red-winged Black Birds, Doves**
5. After being labeled a pest by the Chinese government, this animal was hunted unmercifully during the 1960's and 1970's. They have now been extirpated from much of China. The Pittsburgh Zoo & PPG Aquarium houses the largest sub-species of this animal. (2 points) **Tiger**

6. The planet's largest monkey is endangered and is capable of destroying large amounts of farmland overnight. Living in troops makes this monkey vulnerable to mass poaching. (2 points) **Mandrill**
7. List three reasons why African elephants could be considered pests. (3 points)
1. **Habitat Destruction and Ecosystem Alteration**
  2. **Crop Raiding**
  3. **Bulls Known to be Aggressive Towards Humans**
8. The African tsetse fly is most commonly known for transmitting this terrible disease. (2 points) **Sleeping sickness**
9. List five potential pest management issues that could occur in the concession areas throughout the Zoo. (5 points)
1. **Yellow Jackets**
  2. **Rats**
  3. **Ants**
  4. **Flies**
  5. **Cockroaches**
10. When prime food types such as fruits, nuts, plants, and insect larvae are limited, this large mammal may turn to garbage dumps, bird feeders, livestock feeding stations, farm crops, campgrounds, and commercial bee huts to find food. (2 points) **Black Bear**
11. Find the non-native fish species that has out-competed its native Pennsylvania cousins. (2 points) **Rainbow Trout**
12. Find a large amphibian in the aquarium that is very common in Pennsylvania but considered a pest species in some Western states. (2 points) **Bullfrog**
13. Foxes, feral cats, rabbits, cane toads, horses, camels, pigs, buffalo, donkeys, and goats are considered the primary non-native pests of which continent? (2 points) **Australia**



14. Name four animals from the Worlds of Discovery building that naturally eliminate pests. (8 points)

1. **Rattlesnakes**
2. **Gila Monster**
3. **Meerkats**
4. **Colorado River Toad**

15. Although protected by the Argentinian government, the South American variety of this animal continues to be considered a pest by fishermen throughout its range. The Pittsburgh Zoo & PPG Aquarium exhibits the California variety. (2 points) **Sea lion**

16. It is estimated that 10,000 of these animals are killed on Pennsylvania's portion of Interstate 80 each year. That is an amazing statistic, considering the fact that they were nearly extirpated from the Commonwealth in the early 1900s. (2 points) **White-tailed deer**

17. More than 8,000 of these Australian mascots are killed annually by cars, resulting in nearly \$15 million worth of damage. (2 points) **Kangaroos**

---

## **IPM Jeopardy**

### **Management Methods**

**100**

**A chemical used to manage unwanted plants or weeds.**

Answer: What are herbicides?

**200**

**Mousetraps, flyswatters, and window screens would be an example of this method of pest control.**

Answer: What is physical or mechanical?

**300**

**This is the first step in developing an IPM plan.**

Answer: What is research; or, what is identifying your pest?

**400**

**IPM involves a combination of these three management methods.**

Answer: What is mechanical, biological, and chemical?

**500**

**Some cities are experimenting with this predator to control pigeon populations.**

Answer: What is the peregrine falcon?

---

## **American Pests**

**100**

**A grub is the larva stage of this insect.**

Answer: What is a beetle?

**200**

**This is the favorite treat of the ladybug.**

Answer: What is an aphid?

**300**

**This is one human health concern that is the result of too many cockroaches.**

Answer: What is asthma or food poisoning?

**400**

**North America's only marsupial.**

Answer: What is an opossum?

**500**

**This human related refuse is considered one of the most important mosquito breeding sites.**

Answer: What are used tires?

---

## Labels

### 100

**This symbol and word is placed on the labels of the most toxic pesticides used by licensed applicators.**

Answer: What is “skull and crossbones” and “danger?”

### 200

**This word is used on most household pesticides to indicate minimal risk to applicators when used according to the label.**

Answer: What is “caution?”

### 300

**The most toxic level of pesticides that can be applied without a license would be identified by this word.**

Answer: What is “warning?”

### 400

**The statement, “Using this product in a manner inconsistent with the label is a violation of federal law” would be found under this label heading.**

Answer: What is “misuse statement?”

### 500

**This statement must be found on the front label of every pesticide.**

Answer: What is “Keep out of the reach of children?”

---

## Zoo Pests

### 100

Although protected by the Argentinian government, the South American variety of this animal continues to be considered a pest by fishermen throughout its range. The Pittsburgh Zoo & PPG Aquarium exhibits the California variety.

Answer: What is a sea lion?

### 200

This animal, also the largest North American rodent, can really damage trees.

Answer: What is a beaver?

### 300

This animal has often been considered a pest. They account for nearly one-quarter of all mammal species.

Answer: What is a bat?

### 400

In portions of Africa, this highly social insectivore is often considered a pest because of its ability to transmit rabies.

Answer: What is a meerkat?

### 500

This rainforest rodent is considered an agricultural pest over much of its range.

Answer: What is an agouti?

---

## **Pest Management History**

**100**

**This is the first widely manufactured and used pesticide.**

Answer: What is DDT?

**200**

**The first recognized insecticide was used in this year (plus or minus 500 years).**

Answer: What is 2500 BC?

**300**

**This book prompted a change in pesticide use.**

Answer: What is Silent Spring?

**400**

**This remains America's number one mosquito repellent.**

Answer: What is DEET?

**500**

**In 1996, this piece of legislation set a tougher standard for pesticide use on foods.**

Answer: What is the Food Quality Protection Act?

### **Final Jeopardy:**

**In 2002, these two states ranked highest in pesticide use.**

Answer: What are California and Florida?

---