

# Integrated Pest Management 101

Madi Johansen  
APM Team Leader





# Goals for Attendees

Attendees will have some familiarity with the history of Integrated Pest Management.



# Goals for Attendees

Attendees will have working knowledge of the IPM definition



# Goals for Attendees

Attendees will be able to state the importance of IPM in Wisconsin Aquatic Plant Management



# Goals for Attendees

Attendees will have the knowledge base to critically read the supplementary IPM guide provided in draft form by the DNR.



# The History of Integrated Pest Management

- Known as IPM
- 1950's California Entomologists
  - Focus on insect control
- Primarily Agricultural Focus
  - Over 70 working definitions of IPM in world



# The History of Integrated Pest Management

Entomologists observed these effects with repeated and sustained pesticide use

- Pest resistance
- Target pest resurgence
- Secondary pest outbreaks
- Environmental Contamination

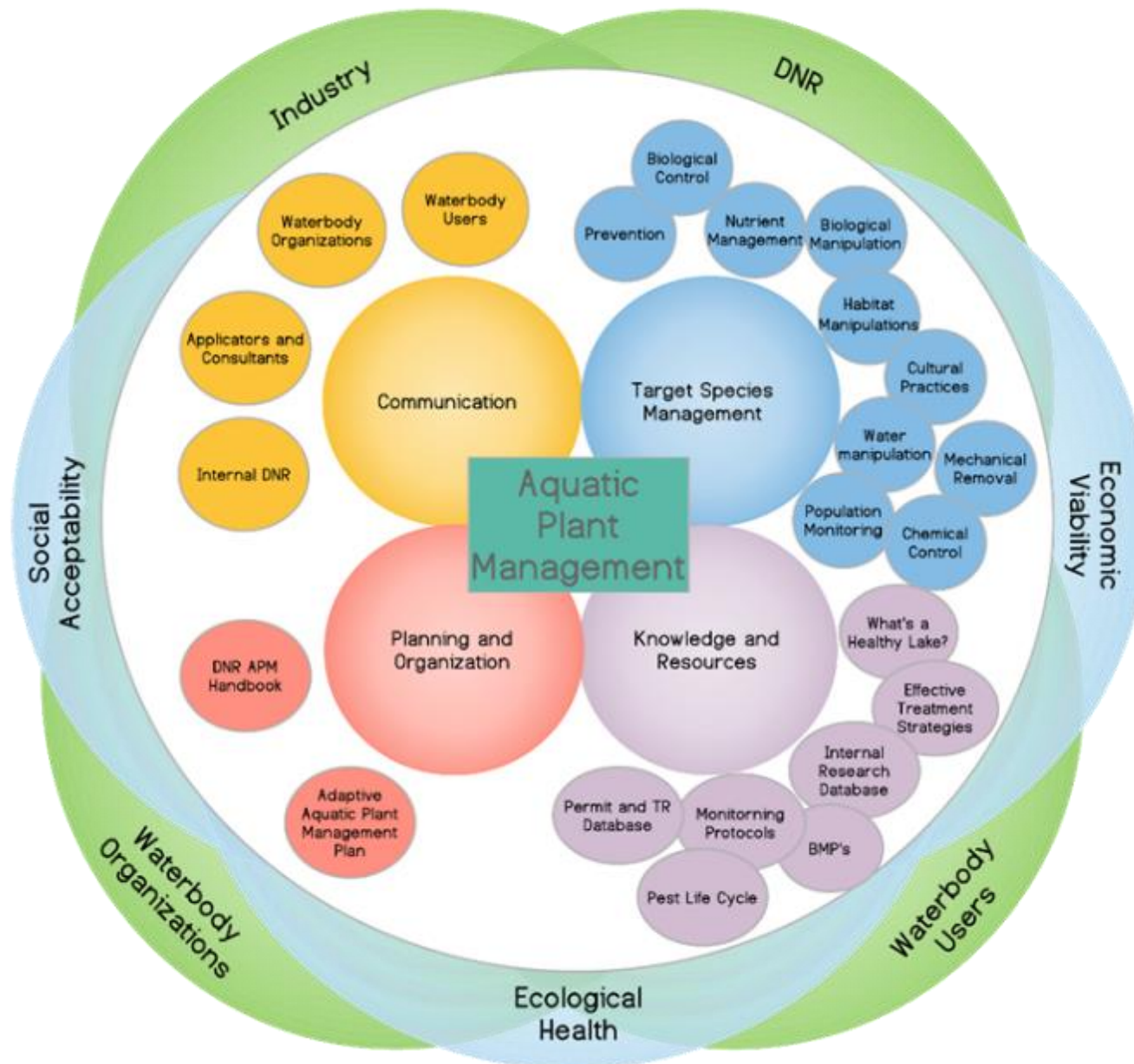


# IPM Definition

Integrated Pest Management (IPM) is an ecosystem-based management strategy that focuses on long-term prevention and/or control of species of concern or their damage. IPM considers all the available control practices such as: prevention, biological control, biomanipulation, nutrient management, habitat manipulation, substantial modification of cultural practices, pesticide application, water level manipulation, mechanical removal and population monitoring. Integrated pest management projects should be informed by current, comprehensive information on pest life cycles and the interactions among pests and the environment.



# Wisconsin Waterbodies - Integrated Pest Management





# The “Other” IPM

## **Integrated Pesticide Management**

Judicious use of pesticides

Focus shifts to resistance prevention

\*More Common in Wisconsin Aquatic Plant Management



# Benefits

## **Integrated Pest Management**

- Ecosystem approach
- Focus on pest impacts
- Limited harm to non-target species

## **Integrated Pesticide Management**

- Judicious use of pesticides
- Easier to manage



# Challenges

## **Integrated Pest Management**

- Can be complex
- Requires cultural buy in and capacity

## **Integrated Pesticide Management**

- Can lead to 'quick fix mentality'
- Targets symptoms, not root causes
- Can become a cycle



# Attendee Question

How are Integrated Pest Management and Integrated Pesticide Management different?

What are some benefits and challenges to both approaches?



# Attendee Question

Which version of IPM do you think is more common in Wisconsin Aquatic Plant Management?

Why?



# How does IPM Work?

IPM focuses on long-term prevention  
of species of concern or their impacts  
by managing the ecosystem



# Prevention Example

Your waterbody (lake, river, wetland, or portion thereof) has water quality issues and the species of concern is tolerant of higher levels of disturbance and nutrient loading, the species could potentially outcompete other organisms.





# Prevention Learning

- Learn how waterbody interacts with nearby waters
- Identify sources of nutrient loading
- Determine the effects of everyone's behaviors



# Prevention Solutions

- Nutrient controls
- Shoreline restorations
- Prevention measures



# How does IPM Work?

Monitoring and accurate species identification can help you decide whether management is needed



# Monitoring Explanation

- Check waterbody to identify all species present
- Correctly identify species of concern
- Research target species' life cycle



# Monitoring Example

Your waterbody has a new introduction of a species that has caused impacts on other waterbodies and your group is worried the same impacts will occur on your waterbody.



# Monitoring Learning

- Assess the situation. You can do so by monitoring the water chemistry, plant community, fisheries and any other relevant factors
- Learn about life cycle and habitat preferences species of concern
- Conduct risk analysis - observe ecosystem/recreation impacts



# Monitoring Solutions

## **Limited Impacts**

- Continue monitoring

## **Broad Impacts**

- Control may be warranted



# How does IPM Work?

IPM programs combine management approaches for greater effectiveness





# Management Explanation

- The most effective, long-term way to manage species of concern is by using a combination of methods that work better together than separately.



# Management Explanation

- **Assessment** – is the use of learning tools and protocols to determine a waterbodies' biological, chemical, physical and social properties and potential impacts.



# Assessment

- Examples include: point-intercept (PI) surveys, water chemistry tests and boater usage surveys.
- This is the most important management strategy on every single waterbody with a species of concern.



# Management Explanation

- **Biological Control** – is the use of natural predators, parasites, pathogens and competitors to control target species and their impacts.



# Biological Controls

- An example would be beetles for purple loosestrife control



# Management Explanation

- **Cultural controls** – are practices that reduce target species establishment, reproduction, dispersal, and survival.



# Cultural Controls

- Examples: a Clean Boats, Clean Waters program at boat launches can reduce the likelihood of the spread of species of concern



# Management Explanation

- **Mechanical and physical controls**
  - can kill a target species directly, block them out, or make the environment unsuitable for it





# Mechanical – Physical Controls

- Examples: Mechanical harvesting, hand pulling, and diver assisted suction harvesting.



# Management Explanation

- **Chemical control** – is the use of pesticides and herbicides.



# Chemical Controls

- In IPM, pesticides are used only when needed and in combination with other approaches for more effective, long-term control.
- Example: Selective herbicides that will do the job and be the safest for other organisms and for air, soil, and water quality



# Attendee Question

Can you name a few of the management practices in an IPM program?



# How to use IPM

- IPM isn't a single solution
- IPM is a process
  - Common sense methods
  - Intentional practices
  - Adaptable with new information



# The Big Eight

1. Identify and Understand the species of concern
2. Prevent the spread and introduction of the species of concern
3. Continually Monitor and Assess the species' impacts on the waterbody
4. Prevent species of concern impacts



# The Big Eight

5. Set Guidelines for when management action is needed
6. Use a combination of biological, cultural, physical/mechanical and chemical management tools
7. Assess the effects of target species' management
8. Change the management strategy when the outcomes of a control strategy create long-term impacts that outweigh the value of target species control.



# Attendee Question

What is the first step in an IPM Program? (Hint: Big Eight)

Why is that first step important?





# How start an IPM Program

1. Does your group understand of the species of concern's life cycle and habitat preferences?
2. Did your group gather baseline data on the water chemistry, plant communities, fisheries and other relevant factors on your waterbody?
3. Have you used the information you gathered above to predict the most likely impacts caused by the species of concern on your waterbody?



# How to Start an IPM Program

4. Has your group set clear scenarios that warrant management based on the best available ecological information?
5. If management is warranted, have you considered all options and designed a management strategy which uses more than one management strategy together?



# How to grow an IPM Program

1. Has your group analyzed the efficacy of past control efforts?
2. Has your group ever changed your management strategy as a result of new information about the target species or significant impacts in control effectiveness, habitat composition and/or water quality?



# How to grow an IPM Program

3. Has your group taken steps to prevent the spread of the species of concern from your waterbody?

4. Has your group taken steps to improve the health of your waterbody and/or watershed?



# Limit of IPM

What if we know very little about the species of concern or management strategy?

## **Adaptive Management**

For another day's learning 😊



# Attendee Question

Why is Integrated Pest Management  
an important tool for Aquatic Plant  
Management?



# How can the public get involved?

IPM guidance going out for public review soon. Please read the guidance and provide comments if you wish.

Together, we can build a strong IPM program for the state of Wisconsin



# Thank You

## Any Questions?

Madi Johansen

[Madison.Johansen@Wisconsin.gov](mailto:Madison.Johansen@Wisconsin.gov)