Hazard Analysis & Critical Control Point (HACCP) Planning to Prevent the Spread of Invasive Species

Mike Goehle
U.S. Fish & Wildlife Service

National Conservation Training Center

Introductions

- Participants - Name, agency, why you're here

HACCP Background

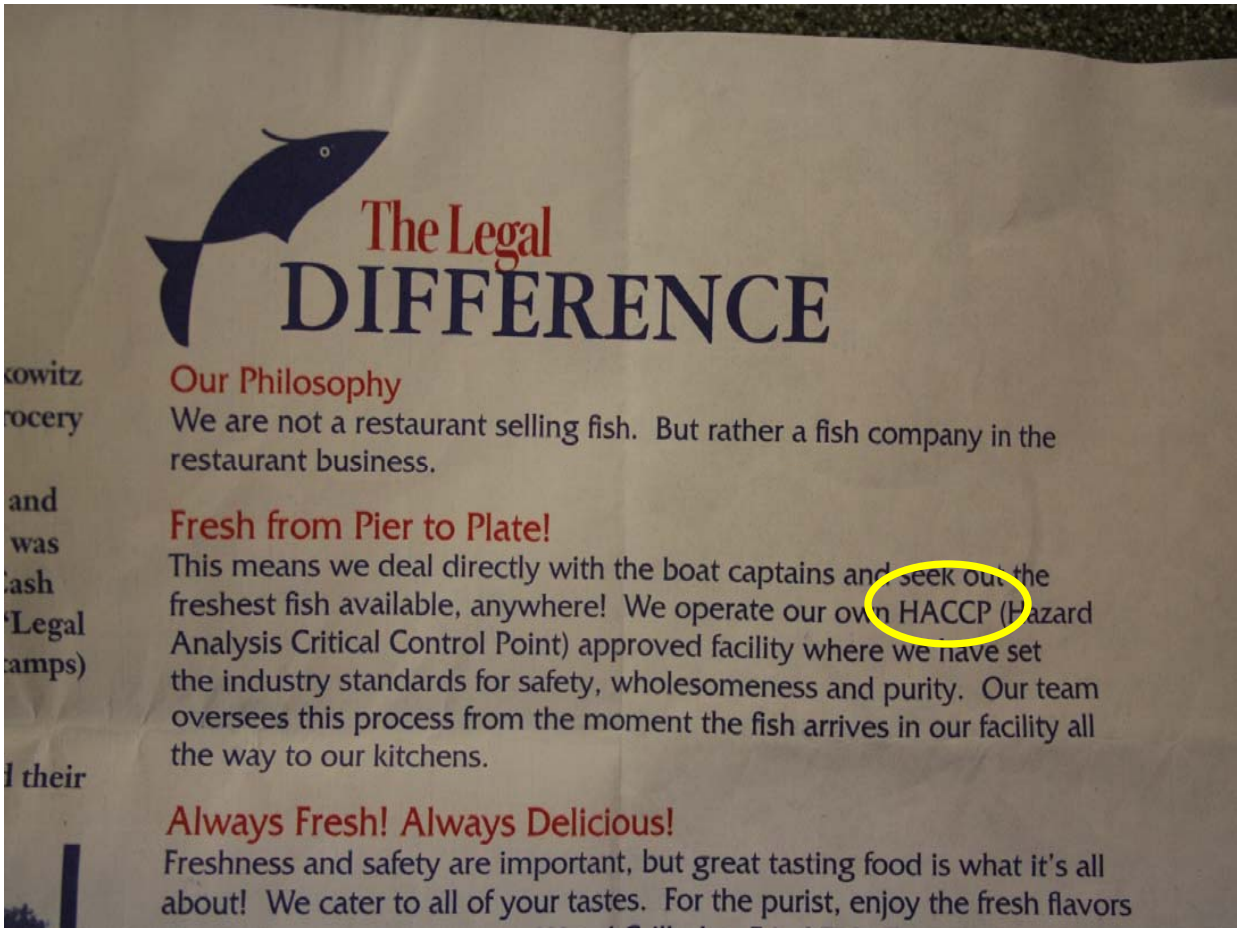
- Special thanks to:
  - Bob Pitman, USFWS, R2 (ret.)
  - Dave Britton, USFWS, R2
  - Jonathan Thompson, USFWS, R8
  - Steve Sharon, WYGFD
  - Susan Pasko, NOAA

HACCP Background

- Got it's start in the food industry
- Used by Pillsbury to supply food for astronauts in the U.S. space program
- A symbol of product purity

How Poodles Came to America

HACCP Background, cont.



The Legal
DIFFERENCE

Our Philosophy
We are not a restaurant selling fish. But rather a fish company in the restaurant business.

Fresh from Pier to Plate!
This means we deal directly with the boat captains and seek out the freshest fish available, anywhere! We operate our own HACCP (Hazard Analysis Critical Control Point) approved facility where we have set the industry standards for safety, wholesomeness and purity. Our team oversees this process from the moment the fish arrives in our facility all the way to our kitchens.

Always Fresh! Always Delicious!
Freshness and safety are important, but great tasting food is what it's all about! We cater to all of your tastes. For the purist, enjoy the fresh flavors

This little boy's Mum-Mums are free of non target organisms!

HACCP Background, cont.

- HACCP adapted to focus on aquatic natural resource management activities, hatcheries. – Sea Grant, then USFWS
- Development of USFWS policy to ensure compliance across the fisheries program (750 FW 1).
- www.HACCP-NRM.org website:
  - HACCP wizard
  - Lists of sample plans
  - Documents

What is HACCP?

"HACCP is a preventative system of hazard control rather than a reactive one."

- Sea Grant Manual, 2004

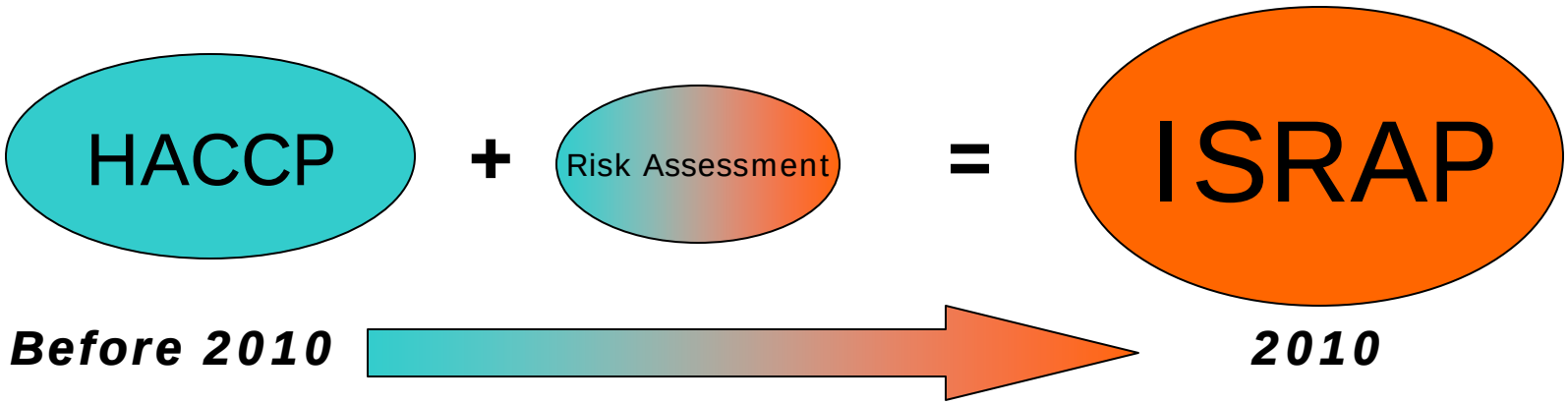
"A system or plan for controlling hazards (non-target species) in order to minimize risk and/or detrimental impact while meeting a management objective"

- USFWS Manual, 2011

HACCP or ISRAP….. Which IS it?!

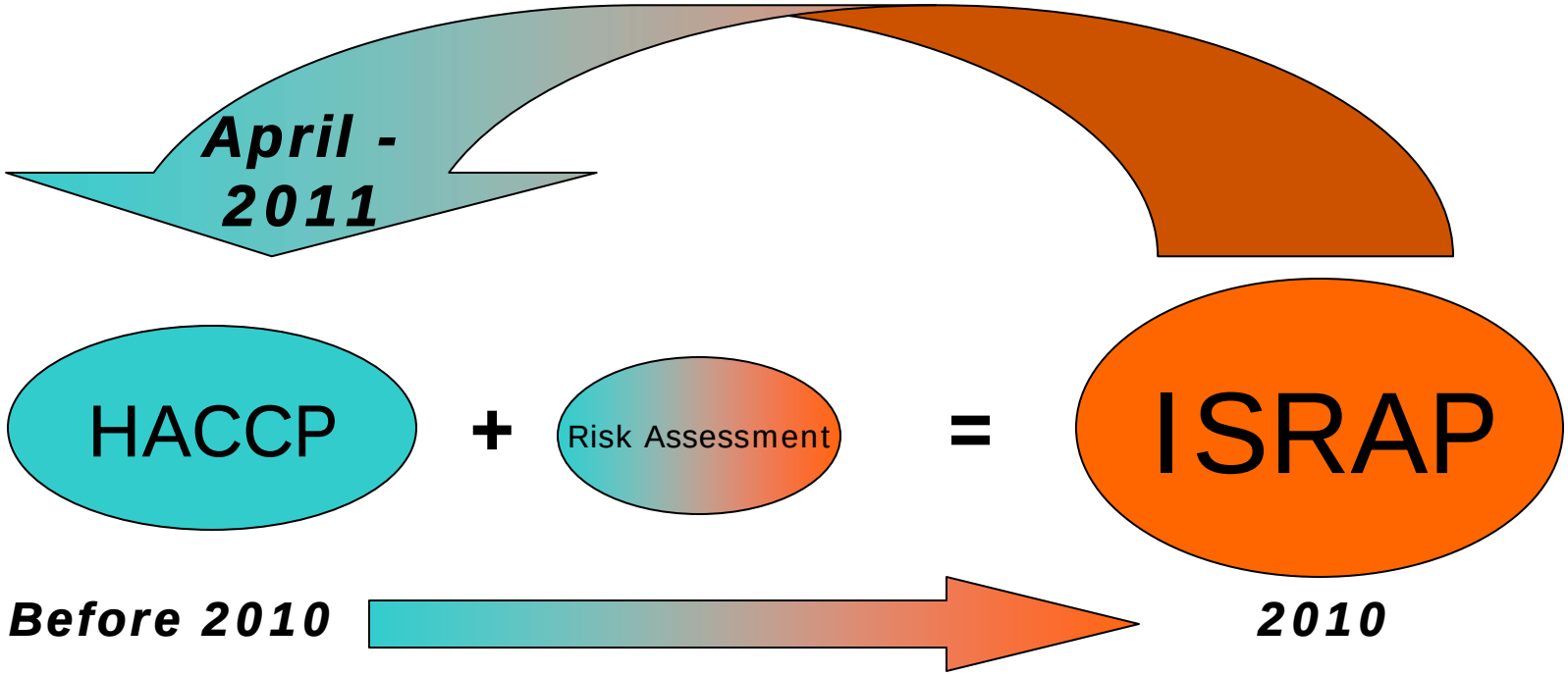
- **HACCP** – Hazard Analysis and Critical Control Points

- **ISRAP** – Invasive Species Risk Assessment Planning

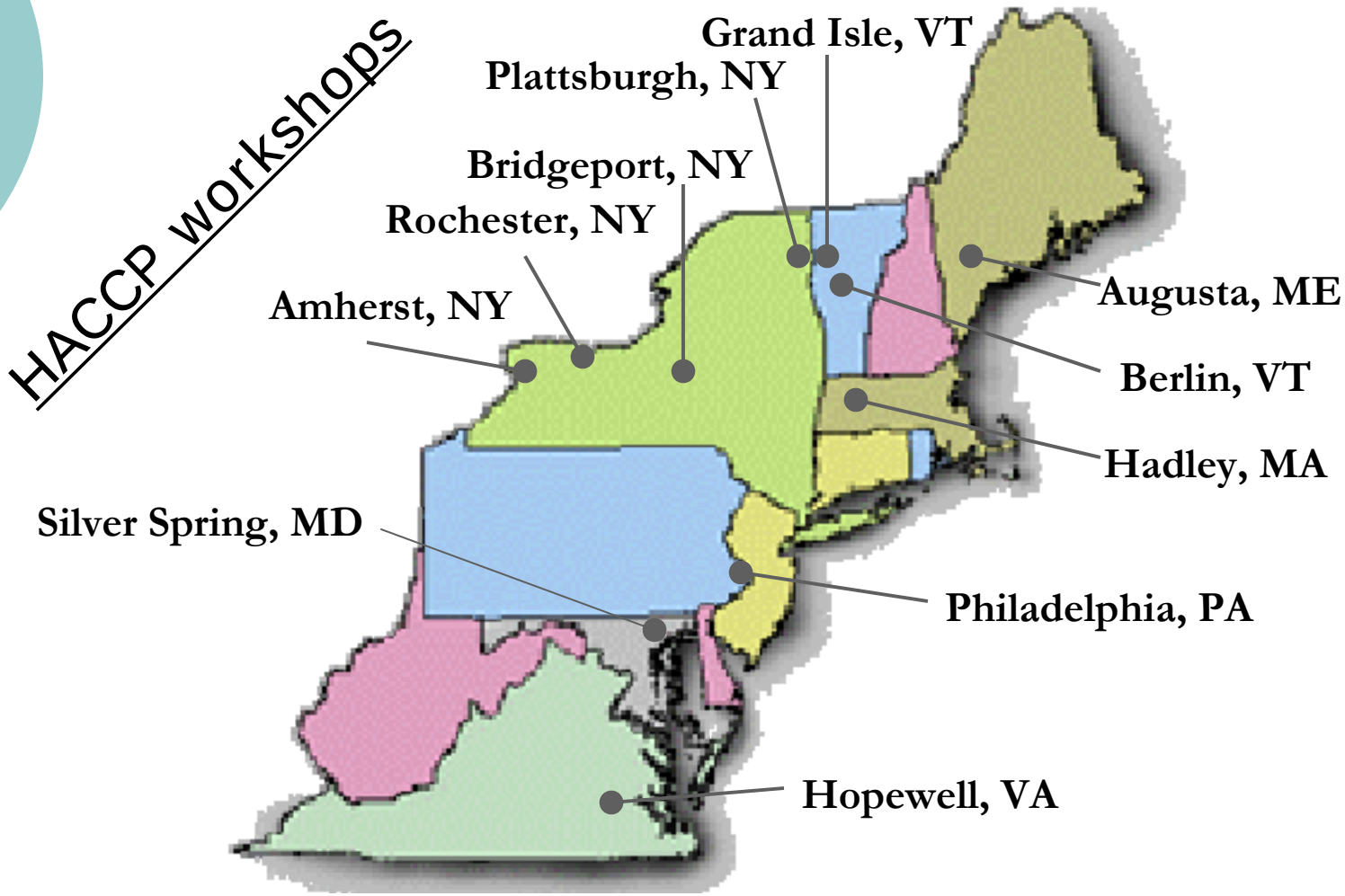


HACCP or ISRAP….. Which IS it?!

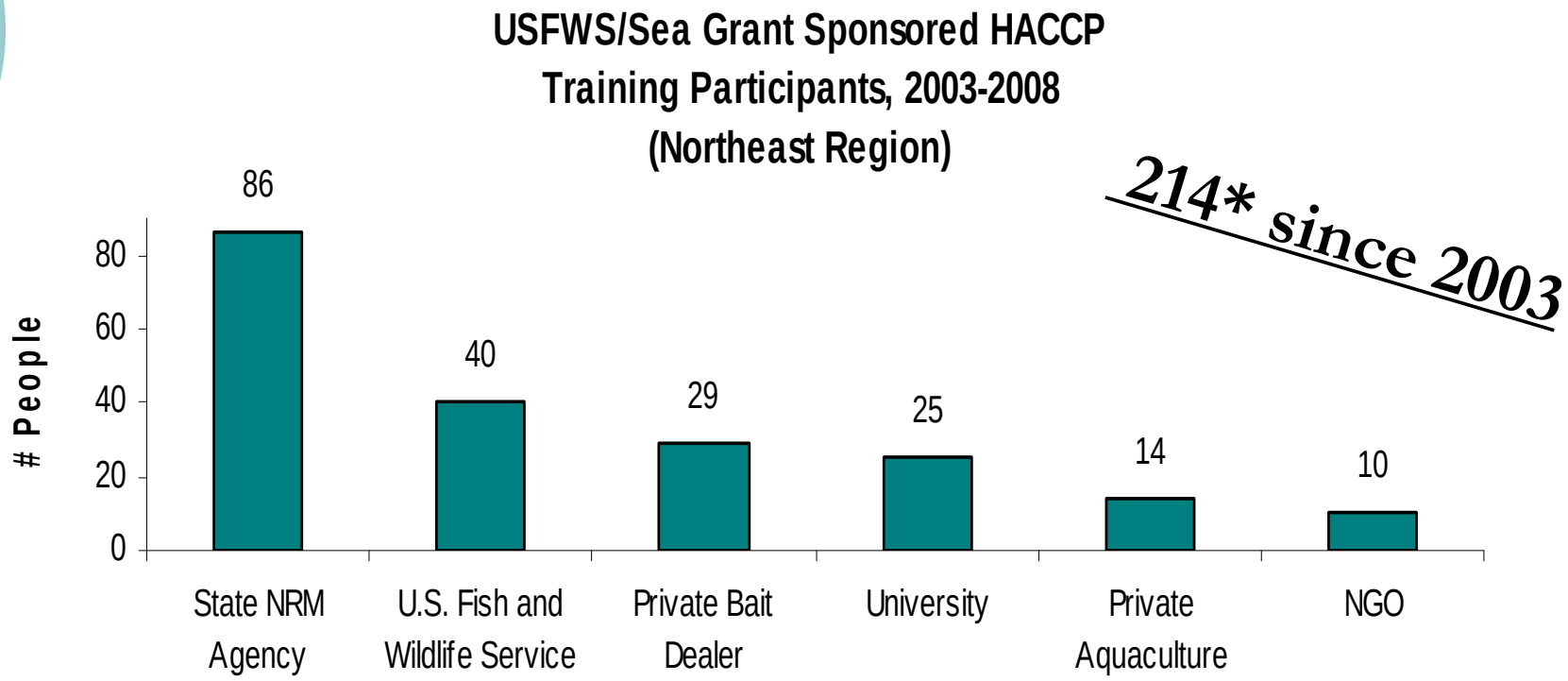
- April, 2011…….Back to HACCP!



HACCP Background, cont.

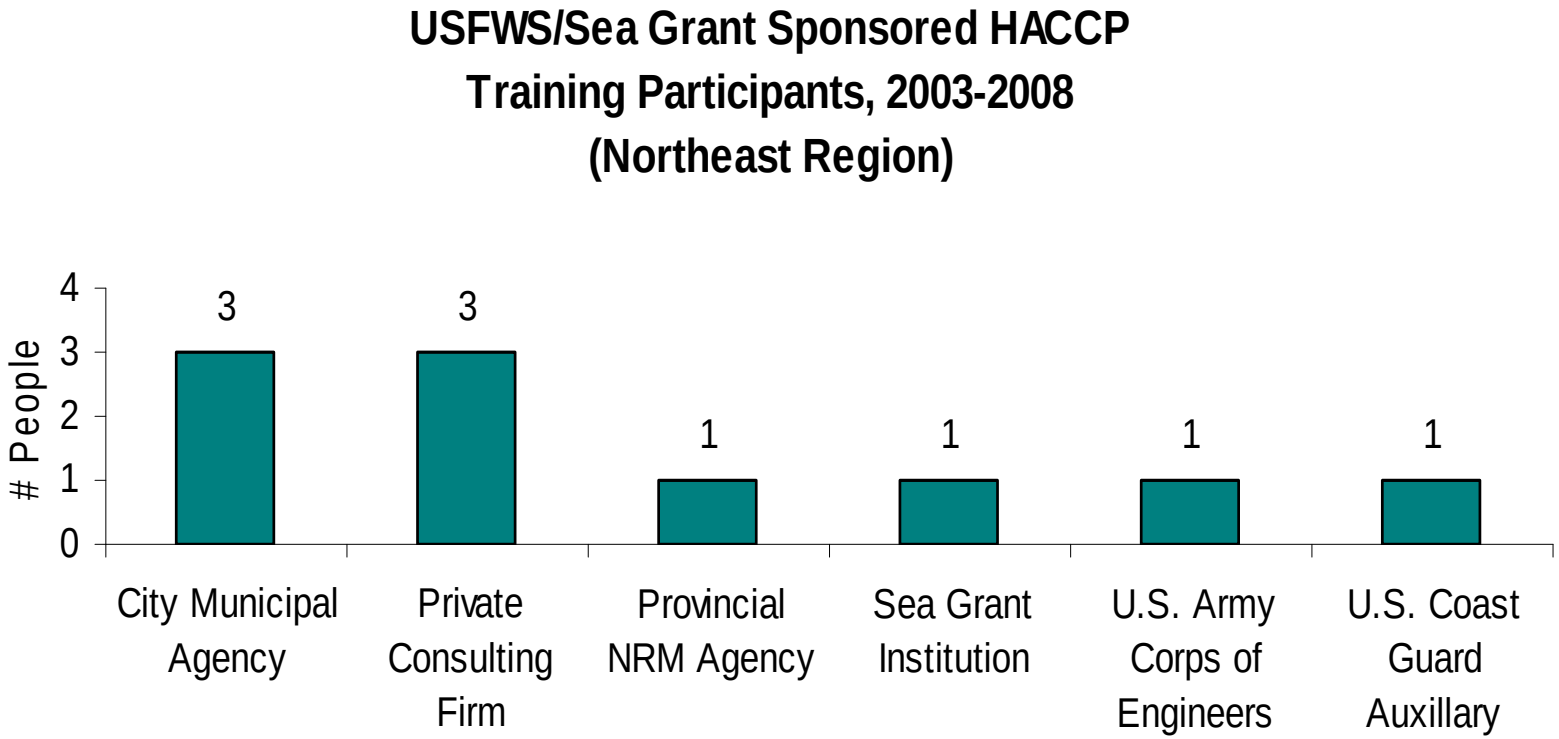


Who have we trained?



** Many additional trainings through less formal workshops*

Who have we trained?



What's the response?

- "Very informative and interesting. I would recommend this course to all resource professionals."
- "Very helpful, a real eye-opener. Useful tool to help deal with a growing crisis/concern."
- "Good overview to help people think proactively to avoid hazards."
- "Particularly liked the regional presentations. Most importantly, it got me to think about it."
- "I found the workshop very informative….. Making people aware is key. Thanks."

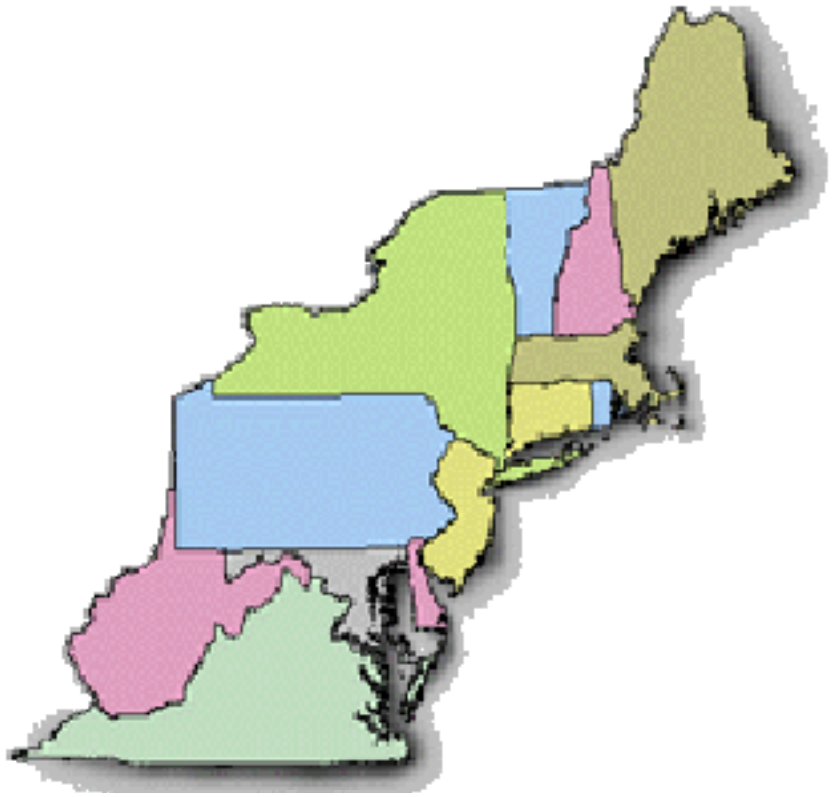
HACCP Success…

- ~ 180 plans listed in the USFWS online database:

  (www.HACCP-NRM.ORG)

- 22 plans being implemented by USFWS – R5 (~80%)

- 10 USFWS/Sea Grant workshops in the Northeast since 2003.



Objectives for the USFWS

- Bring our stations online with effective HACCP plans per strategic vision goals and 750 FW 1.
- Provide resources, training and technical support to partner federal agencies, states, universities…anyone moving species!

What ***Really*** is HACCP?

- HACCP is:
  - A proactive tool to eliminate or reduce the risk of moving non-target species
  - A science-based approach to assessing a process
- HACCP is NOT:
  - A guarantee that invasive species will never be introduced or spread
  - A method of eradicating existing invasive species
  - Intended to cause termination of a project

Video

“From Net To Sale”

The 5 Steps of HACCP

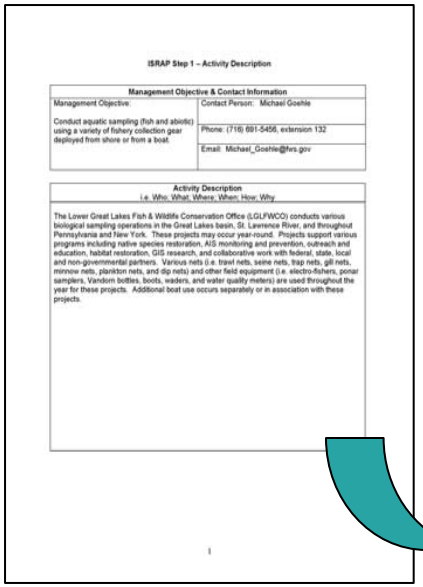
1. Activity Description
2. Activity Flow Chart
3. Potential Non-Targets
4. Non-Target Analysis Worksheet
5. Non-Target Risk Action Plan

"… *a science-based approach* "

- Traditional Scientific Method:
  - Make observations/ask questions
  - Form hypothesis
  - Test hypothesis
  - Record results
  - Make conclusions
  - Report results
  - Re-test as needed

"… *a science-based approach* "

- HACCP:
  - Identify the process
  - List hazards (hypotheses of risk)
  - Implement controls
  - Evaluate/monitor control actions

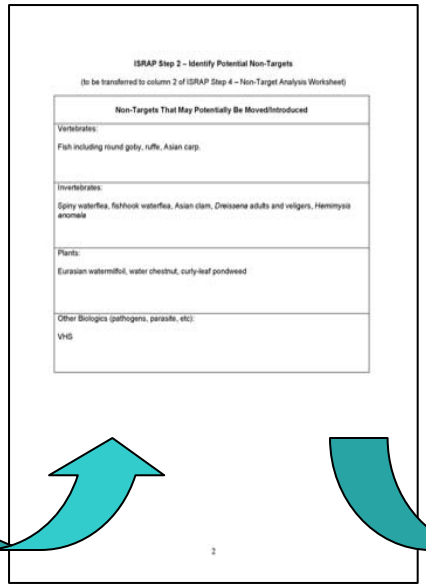


ISRAP Step 1 – Activity Description

Management Objective & Contact Information	
Management Objective: Conduct aquatic sampling (fish and abiotic) using a variety of fishery collection gear deployed from shore or from a boat.	Contact Person: Michael Goehle Phone: (716) 691-5456, extension 132 Email: Michael_Goehle@fws.gov

Activity Description i.e. Who, What, Where, When, How, Why
The Lower Great Lakes Fish & Wildlife Conservation Office (LGLFWCO) conducts various biological sampling operations in the Great Lakes basin, St. Lawrence River, and throughout Pennsylvania and New York. These projects may occur year-round. Projects support various programs including native species restoration, AIS monitoring and prevention, outreach and education, habitat restoration, GIS research, and collaborative work with federal, state, local and non-governmental partners. Various nets (i.e. trawl nets, seine nets, trap nets, gill nets, minnow nets, plankton nets, and dip nets) and other field equipment (i.e. electro-fishers, ponar samplers, Vandorn bottles, boots, waders, and water quality meters) are used throughout the year for these projects. Additional boat use occurs separately or in association with these projects.

1

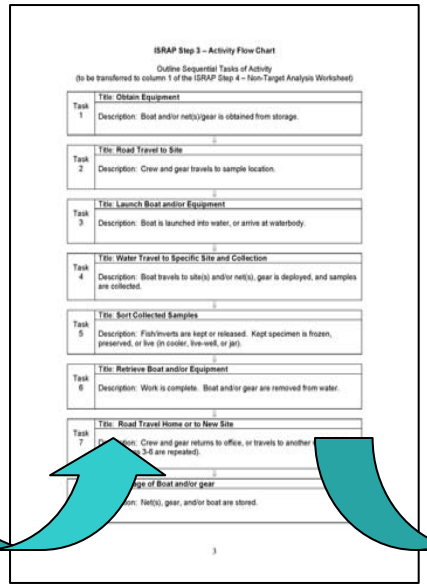


ISRAP Step 2 – Identify Potential Non-Targets

(to be transferred to column 2 of ISRAP Step 4 – Non-Target Analysis Worksheet)

Non-Targets That May Potentially Be Moved/Introduced
Vertebrates: Fish including round goby, ruffe, Asian carp.
Invertebrates: Spiny waterflea, fishhook waterflea, Asian clam, *Dreissena* adults and veligers, *Hemimysis anomala*
Plants: Eurasian watermilfoil, water chestnut, curly-leaf pondweed
Other Biologics (pathogens, parasite, etc): VHS

2



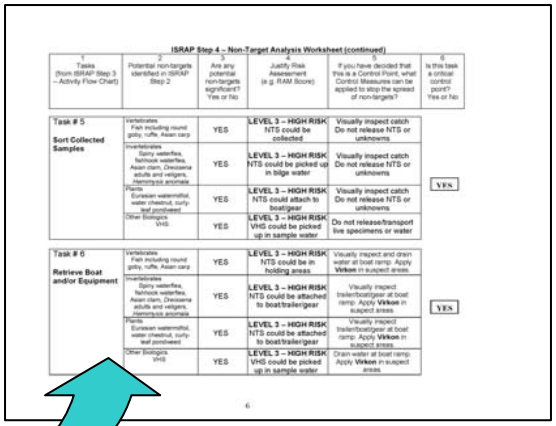
ISRAP Step 3 – Activity Flow Chart

Outline Sequential Tasks of Activity

(to be transferred to column 1 of the ISRAP Step 4 – Non-Target Analysis Worksheet)

Task 1	Title: Obtain Equipment Description: Boat and/or net(s)/gear is obtained from storage.
Task 2	Title: Road Travel to Site Description: Crew and gear travels to sample location.
Task 3	Title: Launch Boat and/or Equipment Description: Boat is launched into water, or arrive at waterbody.
Task 4	Title: Water Travel to Specific Site and Collection Description: Boat travels to site(s) and/or net(s), gear is deployed, and samples are collected.
Task 5	Title: Sort Collected Samples Description: Fish/inverts are kept or released. Kept specimen is frozen, preserved, or live (in cooler, live-well, or jar).
Task 6	Title: Retrieve Boat and/or Equipment Description: Work is complete. Boat and/or gear are removed from water.
Task 7	Title: Road Travel Home or to New Site …ption: Crew and gear returns to office, or travels to another … 3-6 are repeated).
…	…ge of Boat and/or gear …on: Net(s), gear, and/or boat are stored.

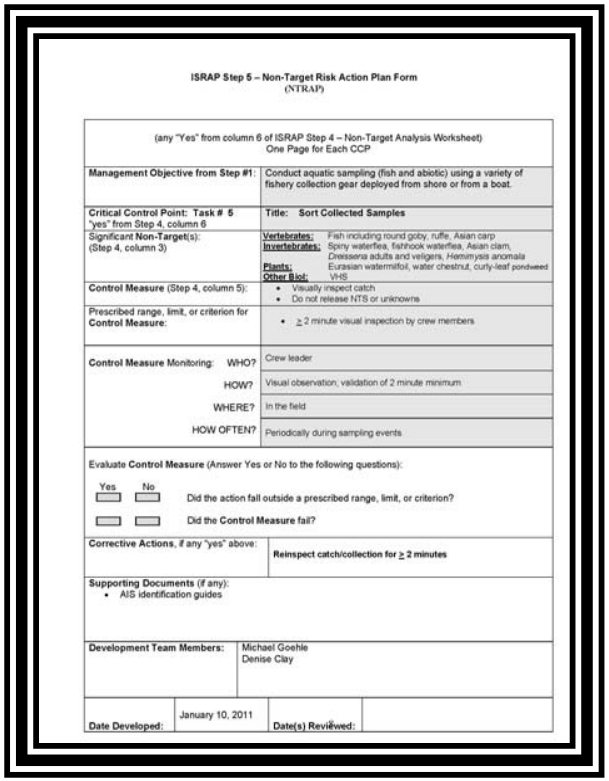
3



ISRAP Step 4 – Non-Target Analysis Worksheet (continued)

1 Tasks (from ISRAP Step 3 – Activity Flow Chart)	2 Potential non-targets identified in ISRAP Step 2	3 Are any potential non-targets significant? Yes or No	4 Justify Risk Assessment (e.g. RAM Score)	5 If you have decided that this is a Control Point, what Control Measures can be applied to stop the spread of non-targets?	6 Is this task a critical control point? Yes or No
Task # 5 **Sort Collected Samples**	Vertebrates Fish including round goby, ruffe, Asian carp	YES	**LEVEL 3 – HIGH RISK** NTS could be collected	Visually inspect catch Do not release NTS or unknowns	YES
	Invertebrates Spiny waterflea, fishhook waterflea, Asian clam, *Dreissena* adults and veligers, *Hemimysis anomala*	YES	**LEVEL 3 – HIGH RISK** NTS could be picked up in bilge water	Visually inspect catch Do not release NTS or unknowns	
	Plants Eurasian watermilfoil, water chestnut, curly-leaf pondweed	YES	**LEVEL 3 – HIGH RISK** NTS could attach to boat/gear	Visually inspect catch Do not release NTS or unknowns	
	Other Biologics VHS	YES	**LEVEL 3 – HIGH RISK** VHS could be picked up in sample water	Do not release/transport live specimens or water	
Task # 6 **Retrieve Boat and/or Equipment**	Vertebrates Fish including round goby, ruffe, Asian carp	YES	**LEVEL 3 – HIGH RISK** NTS could be in holding areas	Visually inspect and drain water at boat ramp. Apply **Virkon** in suspect areas.	YES
	Invertebrates Spiny waterflea, fishhook waterflea, Asian clam, *Dreissena* adults and veligers, *Hemimysis anomala*	YES	**LEVEL 3 – HIGH RISK** NTS could be attached to boat/trailer/gear	Visually inspect trailer/boat/gear at boat ramp. Apply **Virkon** in suspect areas.	
	Plants Eurasian watermilfoil, water chestnut, curly-leaf pondweed	YES	**LEVEL 3 – HIGH RISK** NTS could be attached to boat/trailer/gear	Visually inspect trailer/boat/gear at boat ramp. Apply **Virkon** in suspect areas.	
	Other Biologics VHS	YES	**LEVEL 3 – HIGH RISK** VHS could be picked up in sample water	Drain water at boat ramp. Apply **Virkon** in suspect areas.	

6



ISRAP Step 5 – Non-Target Risk Action Plan Form

(NTRAP)

(any "Yes" from column 6 of ISRAP Step 4 – Non-Target Analysis Worksheet) One Page for Each CCP	
Management Objective from Step #1:	Conduct aquatic sampling (fish and abiotic) using a variety of fishery collection gear deployed from shore or from a boat.
Critical Control Point: Task # 5 "yes" from Step 4, column 6	**Title: Sort Collected Samples**
Significant **Non-Target**(s): (Step 4, column 3)	**Vertebrates:** Fish including round goby, ruffe, Asian carp **Invertebrates:** Spiny waterflea, fishhook waterflea, Asian clam, *Dreissena* adults and veligers, *Hemimysis anomala* **Plants:** Eurasian watermilfoil, water chestnut, curly-leaf pondweed **Other Biol:** VHS
Control Measure (Step 4, column 5):	• Visually inspect catch • Do not release NTS or unknowns
Prescribed range, limit, or criterion for **Control Measure**:	• ≥ 2 minute visual inspection by crew members
Control Measure Monitoring: WHO?	Crew leader
HOW?	Visual observation; validation of 2 minute minimum
WHERE?	In the field
HOW OFTEN?	Periodically during sampling events

Evaluate **Control Measure** (Answer Yes or No to the following questions):

Yes	No	
☐	☐	Did the action fall outside a prescribed range, limit, or criterion?
☐	☐	Did the **Control Measure** fail?

Corrective Actions, if any "yes" above:	**Reinspect catch/collection for ≥ 2 minutes**
Supporting Documents (if any): • AIS identification guides	
Development Team Members:	Michael Goehle Denise Clay
Date Developed: January 10, 2011	**Date(s) Reviewed:**

5 sequential steps to create the plan

STEP 1

ACTIVITY DESCRIPTION

1. Activity Description

- Short, concise description of what the proposed activity is
- Should identify: "who, what, where, when, why, how"

The Lower Great Lakes FWCO conducts yearly electrofishing in Buffalo harbor for the collection of walleye. Work is conducted from April 1 to May 30. Walleye are collected as part of lake-wide tagging efforts to monitor movement of Lake Erie stocks.

1. Activity Description – *Fisheries office example*

The Lower Great Lakes Fish & Wildlife Conservation Office (LGLFWCO) conducts various biological sampling operations in the Great Lakes basin, St. Lawrence River, and throughout Pennsylvania and New York. These projects may occur year-round. Projects support various programs including native species restoration, AIS monitoring and prevention, outreach and education, habitat restoration, GIS research, and collaborative work with federal, state, local and non-governmental partners. Various nets (i.e. trawl nets, seine nets, trap nets, gill nets, minnow nets, plankton nets, and dip nets) and other field equipment (i.e. electro-fishers, ponar samplers, Vandorn bottles, boots, waders, and water quality meters) are used throughout the year for these projects. Additional boat use occurs separately or in association with these projects.


MAY 13 2003


JUN 4 2003

1. Activity Description – *Hatchery example*

To aid in the restoration of the Connecticut River, the U.S. Fish and Wildlife Service, along with members of the Connecticut River Atlantic Salmon Committee (CRASC), annually produce and stock 5-8 million Atlantic salmon fry into Connecticut River tributaries out of the White River National Fish Hatchery in Bethel Vermont. Eggs for this endeavor are produced at the Richard Cronin National Salmon Station (RCNSS), North Attleboro National Fish Hatchery (NANFH), White River National Fish hatchery (WRNFH), Kensington State Fish Hatchery (KSFH) in CT, and Roger Reed State Fish Hatchery (RRSFH) in MA.

HACCP Step 1 – Activity Description

Management Objective & Contact Information	
HACCP Plan Title Biological Sampling	
Management Objective: Conduct aquatic sampling (fish and abiotic) using a variety of fishery collection gear deployed from shore or from a boat.	Contact Person: Michael Goehle
	Phone: (716) 691-5456, extension 132
	Email: Michael_Goehle@fws.gov

Activity Description

i.e. Who; What; Where; When; How; Why

The Lower Great Lakes Fish & Wildlife Conservation Office (LGLFWCO) conducts various biological sampling operations in the Great Lakes basin, St. Lawrence River, and throughout Pennsylvania and New York. These projects may occur year-round. Projects support various programs including native species restoration, AIS monitoring and prevention, outreach and education, habitat restoration, GIS research, and collaborative work with federal, state, local and non-governmental partners. Various nets (i.e. trawl nets, seine nets, trap nets, gill nets, minnow nets, plankton nets, and dip nets) and other field equipment (i.e. electro-fishers, ponar samplers, Vandorn bottles, boots, waders, and water quality meters) are used throughout the year for these projects. Additional boat use occurs separately or in association with these projects.

STEP 2

ACTIVITY FLOW CHART

2. Activity Flow Chart

- Chronological listing of the steps taken in the project
- Top down approach
- Lump or split? (Team brainstorming)
- Typically 7-8 steps, but not required

Describe the steps needed…

"Fishing for bluegills"

1. Buy fishing license
2. Buy tackle (hooks, bait, etc)
3. Travel to launch ramp
4. Launch boat
5. Motor/paddle to site
6. Catch fish
7. Drive home

HACCP Step 2 – Activity Flow Chart

Outline Sequential Tasks of Activity

(to be transferred to column 1 of the HACCP Step 4 – Non-Target Analysis Worksheet)

Task 1	Title: **Obtain Equipment** Description: Boat and/or net(s)/gear is obtained from storage.
⇓	
Task 2	Title: **Road Travel to Site** Description: Crew and gear travels to sample location.
⇓	
Task 3	Title: **Launch Boat and/or Equipment** Description: Boat is launched into water, or arrive at waterbody.
⇓	
Task 4	Title: **Water Travel to Specific Site and Collection** Description: Boat travels to site(s) and/or net(s), gear is deployed, and samples are collected.
⇓	
Task 5	Title: **Sort Collected Samples** Description: Fish/inverts are kept or released. Kept specimen is frozen, preserved, or live (in cooler, live-well, or jar).

Chapter 3: Step 2 – Activity Flow Chart
HACCP Planning to Prevent the Spread of Invasive Species

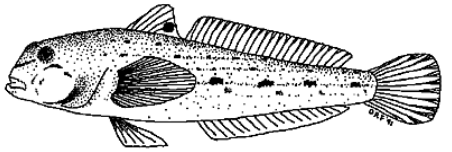
Example Activity Diagram

STEP 3

POTENTIAL NON-TARGETS

3. Potential Non-Targets

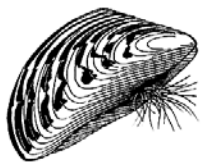
- Organized into the following groups:
  - Vertebrates
  - Invertebrates
  - Plants
  - Other Biologics (e.g. disease, pathogen, parasite)

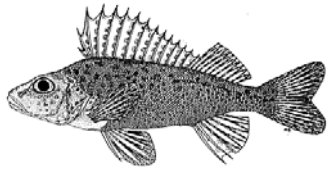


Plenty of species.....

3. Potential Non-Targets

- Species that are "*reasonably likely**"
- Can be aquatic or terrestrial
- Listed separately due to differing controls / life histories
- Important to have team approach
- Important to contact experts, especially with likely invaders





**1995 FDA provisions of HACCP Seafood regulations*

HACCP Step 3 – Identify Potential Non-Targets

(to be transferred to column 2 of HACCP Step 4 – Non-Target Analysis Worksheet)

Non-Targets That May Potentially Be Moved/Introduced
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Plants: Eurasian watermilfoil, water chestnut, curly-leaf pondweed
Other Organisms (pathogens, parasite, etc): VHS

STEP 4

NON-TARGET ANALYSIS WORKSHEET

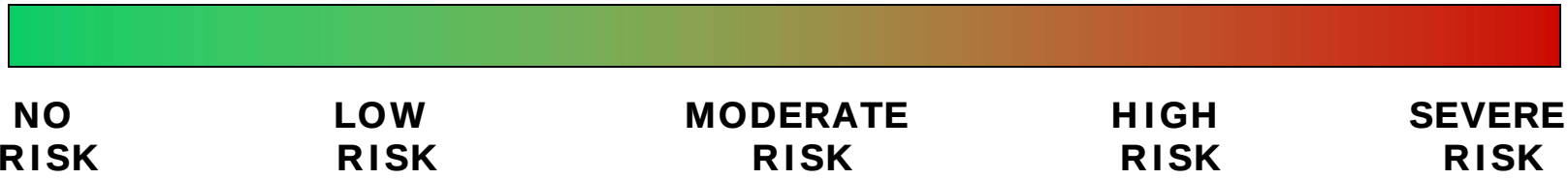
4. Non-Target Analysis Worksheet

- Analyze each step in the process for:
  - Significance?
  - Justify with *Risk Assessment Diagram*
  - Identify and list control options
  - Ask: is this is the **best** place to control the hazard?
  - Assign CCP or CP

  (use decision tree if warranted)

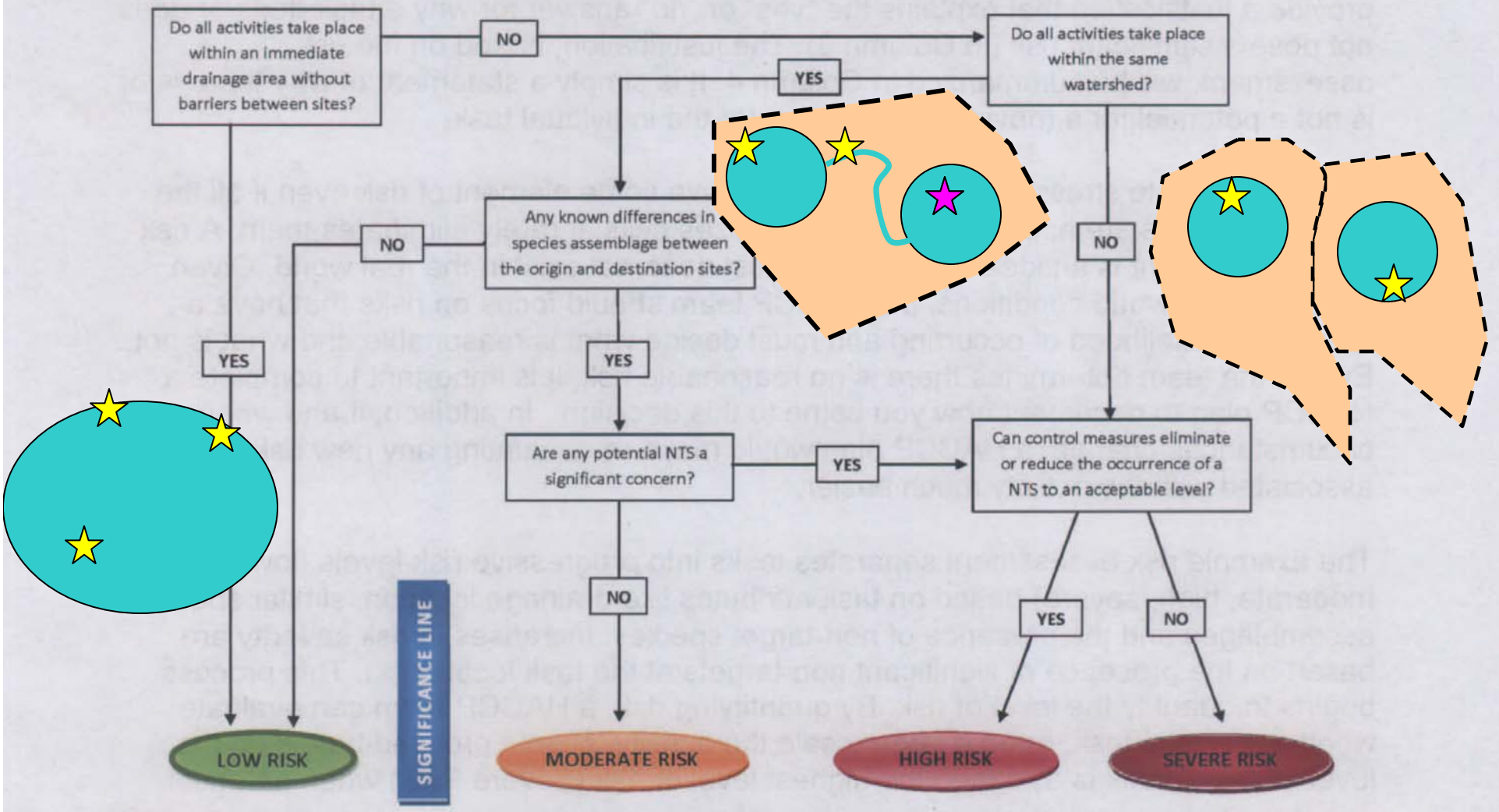
4. Non-Target Analysis Worksheet

- The Risk Assessment Diagram



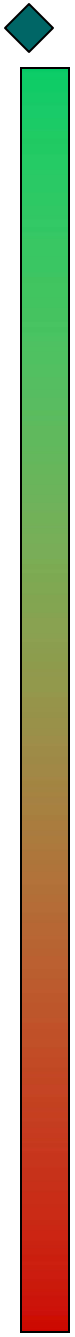
- What's the risk associated with a particular task?
- If we assume the *precautionary principle*, (ie.) the spp. has negative impact) we're left with analyzing the *likelihood* of moving spp.
  - Based on location of task, species known or unknown, plans for gear after use, other…?

Example of Risk Assessment for Aquatic Management Activities



Risk Level	* Criterion for Aquatic Management Activities
NO RISK	• Boat/gear are not in water (for example transport on road) • Aquatic species are not encountered • Boat/gear **were** properly disinfected last time or have been dry for extended periods of time, or are brand new.
Level 1: Low Risk	• Task occurs on closed watershed • This is the only survey site prior to disinfection • Known species are present in all other waters you work • Gear will **not** be loaned out to another agency after survey
Level 2: Moderate Risk	• Task occurs on a watershed that connects to others • Boat/gear were **not** properly disinfected from last use or disinfection status is unknown • Species composition of watershed is unknown • Gear **may** be loaned to another agency after survey
Level 3: High Risk	• Task occurs on a watershed that connects to others • Additional survey sites scheduled before decontamination (for example, road trip or multiple sites/watersheds per day) • Known AIS present • Control/disinfection is possible before next survey site
Level 4: Severe Risk	• Known AIS present • Control/disinfection is NOT possible before next survey site • HACCP not effective in removal or control from process

Significance Line



4. Non-Target Analysis Worksheet

- Identify and list control options

Power Washing

Disinfectant Bath

UV Light

Visual Inspection

Desiccation

Heat/Hot Water

Freezing

Physical Filter

HACCP Step 4 – Non-Target Analysis Worksheet

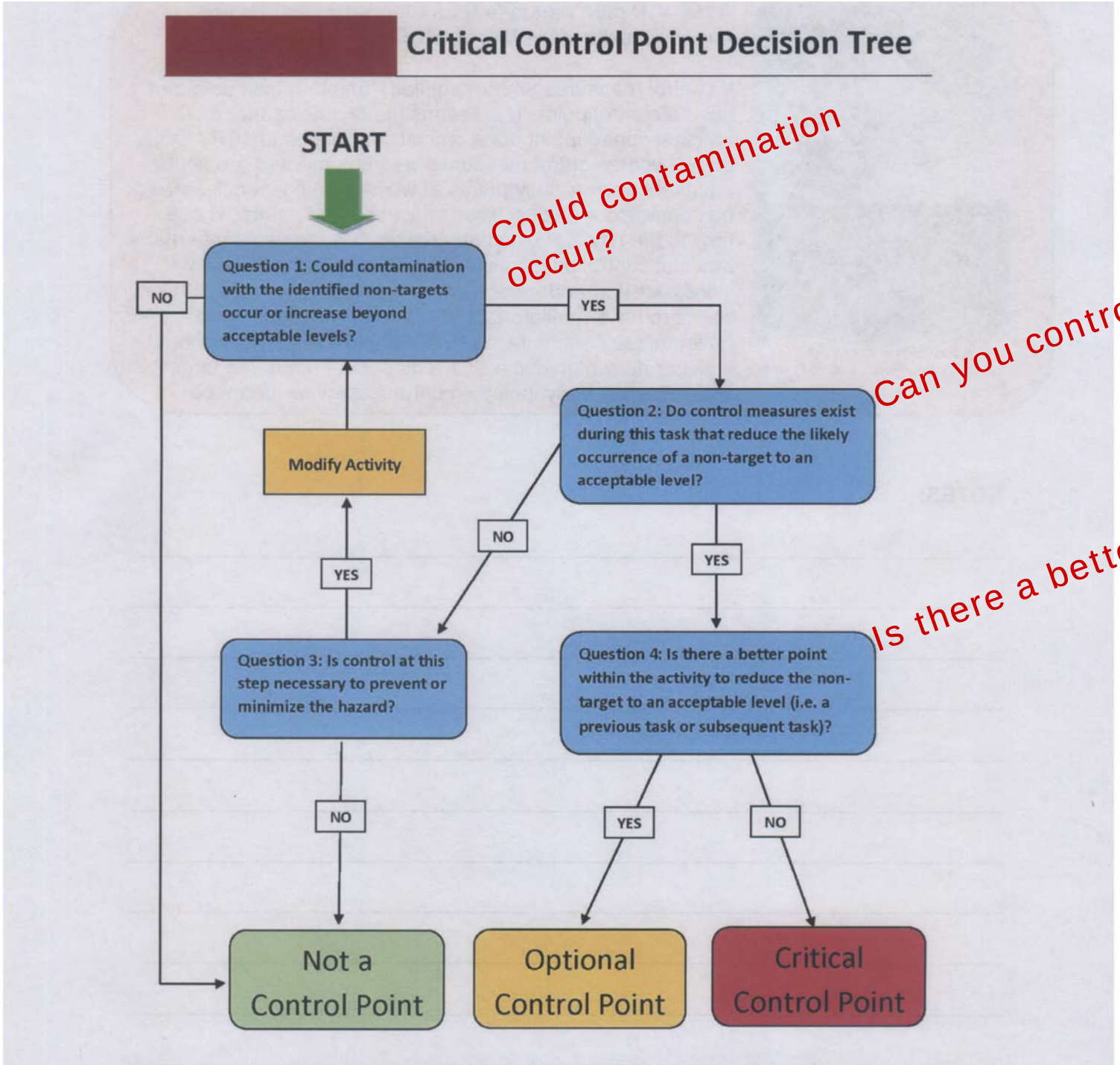
1 Tasks (from HACCP Step 2 - Activity Flow Chart)	2 Potential non-targets identified in HACCP Step 3	3 Are any potential non-targets significant? Yes or No	4 Justify Risk Assessment	5 Identify Control Measures that can be applied to stop the spread of non-targets	6 Is this task a critical control point? Yes or No
Task # 1 **Obtain Equipment**	Vertebrates None	NO	NO RISK NTS not encountered		NO
	Invertebrates None	NO	NO RISK NTS not encountered		
	Plants None	NO	NO RISK NTS not encountered		
	Other Organisms None	NO	NO RISK NTS not encountered		
Task # 2 **Road Travel to Site**	Vertebrates None	NO	NO RISK NTS not encountered		NO
	Invertebrates None	NO	NO RISK NTS not encountered		
	Plants None	NO	NO RISK NTS not encountered		
	Other Organsims None	NO	NO RISK NTS not encountered		

4. Non-Target Analysis Worksheet

- Ask: is this is the **best** place to control the hazard?

Every significant hazard must have at least one Critical Control Point (CCP):

- The *best* point, step, or procedure at which hazards can be controlled


Critical Control Point Decision Tree
START
Question 1: Could contamination with the identified non-targets occur or increase beyond acceptable levels?
NO
YES
Modify Activity
YES
Question 3: Is control at this step necessary to prevent or minimize the hazard?
NO
Not a Control Point
Question 2: Do control measures exist during this task that reduce the likely occurrence of a non-target to an acceptable level?
NO
YES
Question 4: Is there a better point within the activity to reduce the non-target to an acceptable level (i.e. a previous task or subsequent task)?
YES
NO
Optional Control Point
Critical Control Point
Could contamination occur?
Can you control?
Is there a better spot?

HACCP Step 4 – Non-Target Analysis Worksheet (continued)

1 Tasks (from HACCP Step 2 – Activity Flow Chart)	2 Potential non-targets identified in HACCP Step 3	3 Are any potential non-targets significant? Yes or No	4 Justify Risk Assessment	5 Identify Control Measures that can be applied to stop the spread of non-targets	6 Is this task a critical control point? Yes or No
Task # 3 **Launch Boat and/or Equipment**	Vertebrates None	NO	NO RISK NTS not encountered		NO
	Invertebrates None	NO	NO RISK NTS not encountered		
	Plants None	NO	NO RISK NTS not encountered		
	Other Organisms None	NO	NO RISK NTS not encountered		

1 Tasks (from HACCP Step 2 – Activity Flow Chart)	2 Potential non-targets identified in HACCP Step 3	3 Are any potential non-targets significant? Yes or No	4 Justify Risk Assessment	5 Identify Control Measures that can be applied to stop the spread of non-targets	6 Is this task a critical control point? Yes or No
Task # 4 **Water Travel to Specific Site and Collection**	Vertebrates Fish including round goby, ruffe, Asian carp	YES	**LEVEL 3 – HIGH RISK** NTS could be collected	Hazard controlled at subsequent step	NO
	Invertebrates Spiny waterflea, fishhook waterflea, Asian clam, *Dreissena* adults and veligers, *Hemimysis anomala*	YES	**LEVEL 3 – HIGH RISK** NTS could be picked up in bilge water	Hazard controlled at subsequent step	
	Plants Eurasian watermilfoil, water chestnut, curly-leaf pondweed	YES	**LEVEL 3 – HIGH RISK** NTS could attach to boat/gear	Hazard controlled at subsequent step	
	Other Organisms VHS	YES	**LEVEL 3 – HIGH RISK** VHS could be picked up in bilge water	Hazard controlled at subsequent step	

1 Tasks (from HACCP Step 2 – Activity Flow Chart)	2 Potential non-targets identified in HACCP Step 3	3 Are any potential non-targets significant? Yes or No	4 Justify Risk Assessment	5 Identify Control Measures that can be applied to stop the spread of non-targets	6 Is this task a critical control point? Yes or No
Task # 5 **Sort Collected Samples**	Vertebrates Fish including round goby, ruffe, Asian carp	YES	**LEVEL 3 – HIGH RISK** NTS could be collected	Visually inspect catch Do not release NTS or unknowns	**YES**
	Invertebrates Spiny waterflea, fishhook waterflea, Asian clam, *Dreissena* adults and veligers, *Hemimysis anomala*	YES	**LEVEL 3 – HIGH RISK** NTS could be picked up in bilge water	Do not release NTS or unknowns	
	Plants Eurasian watermilfoil, water chestnut, curly-leaf pondweed	YES	**LEVEL 3 – HIGH RISK** NTS could attach to boat/gear	Visually inspect catch Do not release NTS or unknowns	
	Other Organisms VHS	YES	**LEVEL 3 – HIGH RISK** VHS could be picked up in sample water	Do not release/transport live specimens or water	

1 Tasks (from HACCP Step 2 – Activity Flow Chart)	2 Potential non-targets identified in HACCP Step 3	3 Are any potential non-targets significant? Yes or No	4 Justify Risk Assessment	5 Identify Control Measures that can be applied to stop the spread of non-targets	6 Is this task a critical control point? Yes or No
Task # 6 **Retrieve Boat and/or Equipment**	Vertebrates Fish including round goby, ruffe, Asian carp	YES	**LEVEL 3 – HIGH RISK** NTS could be in holding areas	Visually inspect and drain water at boat ramp. Apply **Virkon** in suspect areas.	
	Invertebrates Spiny waterflea, fishhook waterflea, Asian clam, *Dreissena* adults and veligers, *Hemimysis anomala*	YES	**LEVEL 3 – HIGH RISK** NTS could be attached to boat/trailer/gear	Visually inspect trailer/boat/gear at boat ramp. Apply **Virkon** in suspect areas.	**YES**
	Plants Eurasian watermilfoil, water chestnut, curly-leaf pondweed	YES	**LEVEL 3 – HIGH RISK** NTS could be attached to boat/trailer/gear	Visually inspect trailer/boat/gear at boat ramp. Apply **Virkon** in suspect areas.	
	Other Organisms VHS	YES	**LEVEL 3 – HIGH RISK** VHS could be picked up in sample water	Drain water at boat ramp. Apply **Virkon** in suspect areas.	

1 Tasks (from HACCP Step 2 – Activity Flow Chart)	2 Potential non-targets identified in HACCP Step 3	3 Are any potential non-targets significant? Yes or No	4 Justify Risk Assessment	5 Identify Control Measures that can be applied to stop the spread of non-targets	6 Is this task a critical control point? Yes or No
Task # 7 **Road Travel Home or to New Site**	Vertebrates None	NO	NO RISK NTS not encountered		**NO**
	Invertebrates None	NO	NO RISK NTS not encountered		
	Plants None	NO	NO RISK NTS not encountered		
	Other Organisms None	NO	NO RISK NTS not encountered		

1 Tasks (from HACCP Step 2 – Activity Flow Chart)	2 Potential non-targets identified in HACCP Step 3	3 Are any potential non-targets significant? Yes or No	4 Justify Risk Assessment	5 Identify Control Measures that can be applied to stop the spread of non-targets	6 Is this task a critical control point? Yes or No
Task # 8 **Storage of Boat and/or gear**	Vertebrates Fish including round goby, ruffe, Asian carp	YES	**LEVEL 3 – HIGH RISK** Final step before next use	Visually inspect and drain water. Apply **Virkon** to all gear; brush; rinse.	**YES**
	Invertebrates Spiny waterflea, fishhook waterflea, Asian clam, *Dreissena* adults and veligers, *Hemimysis anomala*	YES	**LEVEL 3 – HIGH RISK** Final step before next use	Visually inspect and drain water. Apply **Virkon** to all gear; brush; rinse.	
	Plants Eurasian watermilfoil, water chestnut, curly-leaf pondweed	YES	**LEVEL 3 – HIGH RISK** Final step before next use	Visually inspect and drain water. Apply **Virkon** to all gear; brush; rinse.	
	Other Organisms VHS	YES	**LEVEL 3 – HIGH RISK** Final step before next use	Visually inspect and drain water. Apply **Virkon** to all gear; brush; rinse.	

4. Non-Target Analysis Worksheet

- Final Thoughts

As a general guideline, a non-target must be controlled if:

1. It is *reasonably likely* to occur beyond an acceptable level.
2. If not properly controlled, the task is likely to result in an unacceptable risk of introducing non-targets that may harm the resource.

STEP 5

NON-TARGET RISK ACTION PLAN

5. Non-Target Risk Action Plan Form – (NTRAP)

- The “walk-away” document
- Consistent list of the points where action is warranted
- Shows how to monitor and correct action if necessary
- Provides an accountability for your efforts (paper trail)
- Enables you to reference supporting documentation

(any "Yes" from column 6 of HACCP Step 4 – Non-Target Analysis Worksheet) One Page for Each CCP	
Management Objective from Step #1:	Conduct aquatic sampling (fish and abiotic) using a variety of fishery collection gear deployed from shore or from a boat.
Critical Control Point: Task # 6 "yes" from Step 4, column 6	**Title: Retrieve Boat and/or Equipment**

The HACCP Plan is "*Finished*"!

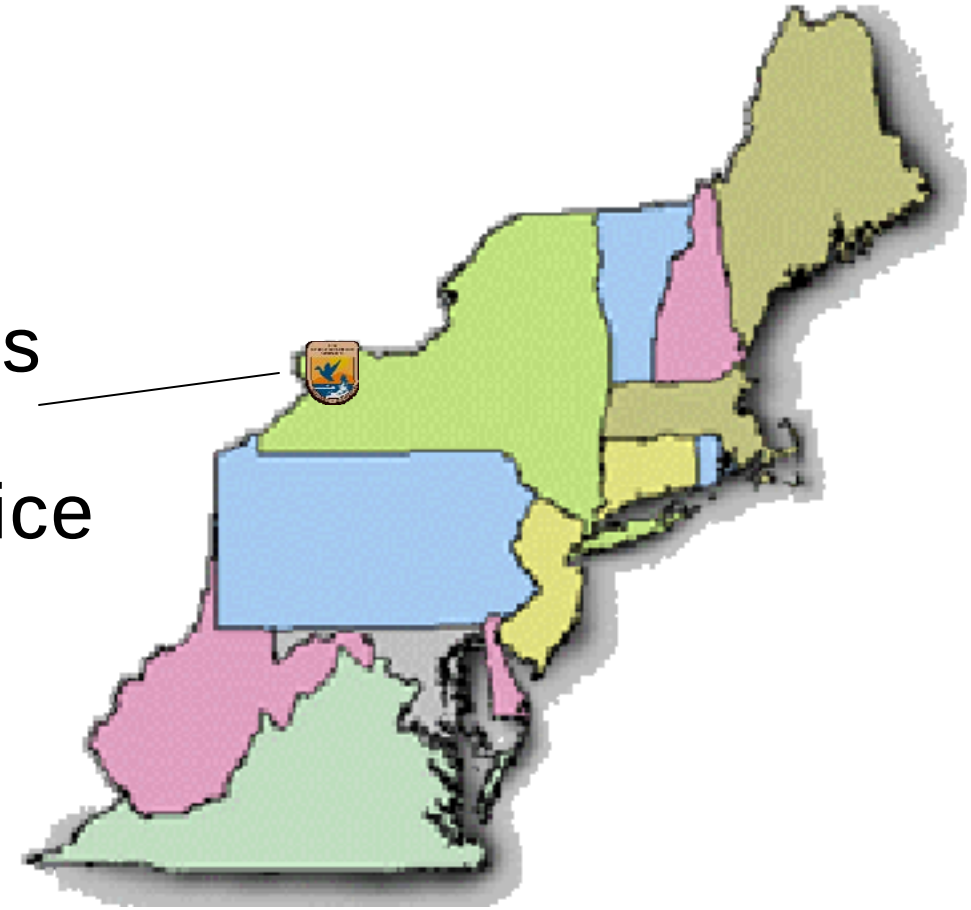
- It may be *finished*, but it's never really *final*
- Factors that affect a plan's status:
  - New species
  - New staff
  - New control technologies
- Plans should be reviewed every year or:
  - Whenever new species, staff, or controls come about

National Examples of HACCP

- Available at: www.HACCP-NRM.org
- Some examples:
  - Fisheries & Wildlife Field Work
  - Technology Centers
  - Hatchery Operations
  - Aquaculture Facilities
  - Academic Institutions

HACCP Example

Lower Great Lakes
Fish & Wildlife
Conservation Office



Recent Updates/News On HACCP

- National USFWS Fisheries Policy

  (750 FW 1)◆

  - March 5, 2010
  - Applies to all Fishery program activities that conduct work that could inadvertently spread invasive or non-target species.
  - Policy: "*To reduce or prevent the spread of invasive and non-target species by implementing HACCP plans*"

Recent Updates/News on HACCP

- The new USFWS version is in the process of being completed
  - Adjustments to the Risk Assessment section
  - Back to calling it “HACCP” again
  - National review team being assembled

Conclusions/Questions/Wrap-Up

- Each regional coordinator of the USFWS is available for technical support/training for HACCP
- Encourage participation from states, provinces, agencies, NGO's
- Ability to adapt "bio-security" plans into a HACCP framework that is consistent and comprehensive

HACCP Website/Wizard

www.HACCP-NRM.org

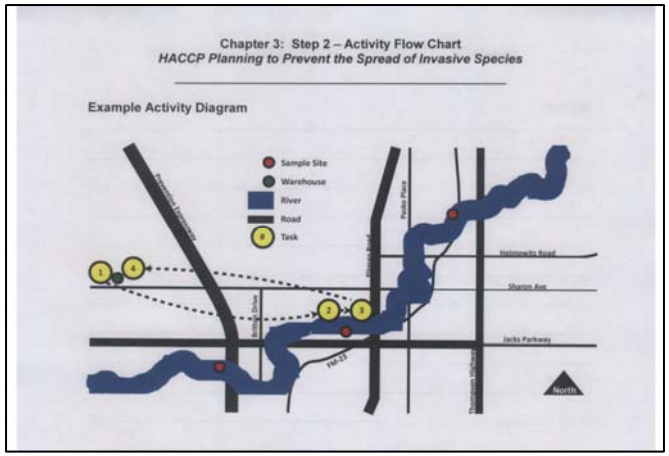
Conclusions/Questions/Wrap-Up

1. Are you already using some sort of bio-security plan?

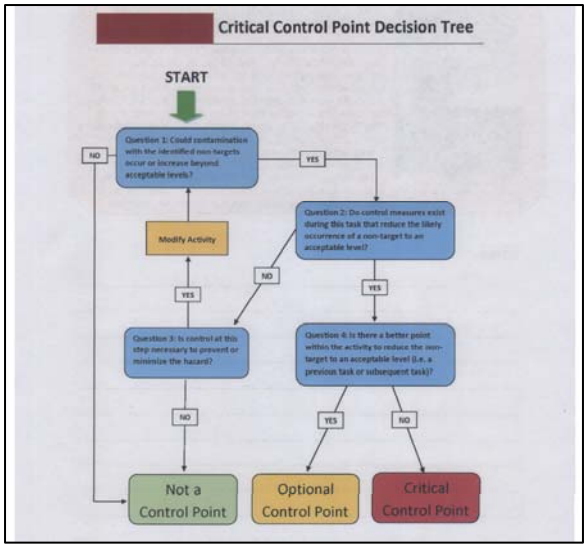
2. Do you see any advantages or disadvantages of using HACCP versus other methods?

3. How would you like to incorporate HACCP into your work?

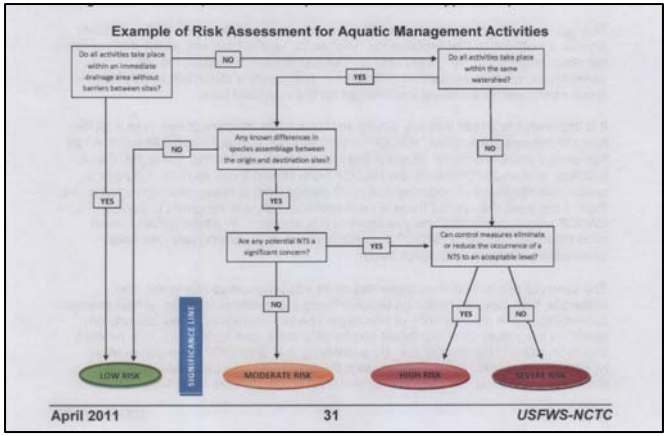
Any comments on the new materials?



Flow diagram map



CCP Decision Tree



Risk Assessment Diagram

Contacts

Mike Goehle
USFWS/LGLFWCO
(716) 691-5456, ext 132

Great Lakes
Sea Grant Network