



***Successful Education Efforts to
Meet the Aquatic Invasive Species
Challenge***

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MILFOIL CAN LOWER LAKEFRONT
PROPERTY VALUE BY 15% - News

©2001
MIKE MARIANO
Concord, MA
Marilyn

SO I FIGURE DIG
A MOAT, PLANT
SOME MILFOIL AND
WA-LA: LOWER OUR
PROPERTY TAX!!



Outline

- Introduce AIS issue in context of public education
- Identify pathways or likely pathways for introductions
- Discuss successes and opportunities:
 - Stop Aquatic Hitchhikers!
 - Habitattitude™
 - AIS-Hazard Analysis and Critical Control Point Program
 - Conclusions and Q&A

Problem

- Great Lakes are battling many invaders: sea lamprey, Eurasian watermilfoil, zebra/quagga mussels, curlyleaf pondweed, ruffe, goby, purple loosestrife...
- Not here or not widely spread: northern snakehead, bighead and silver carp, hydrilla, giant salvinia, European frogbit, bloody red shrimp, VHS...



Infestations and Risk

# of Infested Waters	Michigan	Minnesota
Zebra mussels (as of '06)	226	10
Eurasian watermilfoil	1,000?	200
Curlyleaf pondweed	?	800
Purple loosestrife	Widespread?	>2,300
Spiny waterflea	>5	20
Rusty crayfish	Widespread?	50
Number of lakes	11,000	11,001
Total population	7.8 M	4.0 M
% of population that fished	8%	19%
# of registered boaters	862,529	828,529
Fishing retail sales	\$1.13 B	\$1.42 B
Tourism industry	\$17.5 B	\$9 B
Tourism jobs	190,000	230,000
Visitors	22 M	28.6 M

What Can Be Done?

- Interrupt the Pathways -

- ❖ *Recreational boaters*
- ❖ *Live bait use by anglers*
- ❖ *Aquarists and water gardeners*
- ❖ *Backyard ornamental gardeners*
- ❖ *Scuba divers*
- ❖ *Waterfowl hunters*
- ❖ *Fish stocking operations*
- ❖ *Management agencies*
- ❖ *Enforcement officers*
- ❖ *Researchers/consultants*
- ❖ Commercial boat haulers
- ❖ *Aquaculture*
- ❖ *Nursery industries*
- ❖ Biological supply houses
- ❖ Commercial shipping



'Alien' plants
or zebra mussels?

Challenges

- Lack of long-term funding
- Few make outreach a priority
- Some use good methods, but we must move “beyond brochures”
- Use of jargon (multiple and confusing terms)
- Opposing values can politicize issue
- Promoting fallacies undermine successes:

“It’s only a matter of time”

“It only takes one mistake”

Missed educational opportunity!

Opportunities

- Build on successes
- Use proven and develop new tools and methods; adapt/adopt those approaches
- Implement to strategically address each pathways
- Form partnerships
- Demonstrate and communicate effectiveness at preventing or slowing the spread of AIS

Recreational Boaters

Challenges:

- Overland transport great risk for spread
- 13.7 M boaters move frequently between waterbodies in the U.S.
- Without proper info, they will likely do nothing

Solutions:

- Boaters will take action if they know what to do
- Strategic public education programs and campaigns are needed to effect behavior
- Efforts should use most effective methods
- Use simple, universal guidelines
- Evaluate effectiveness of efforts to tailor future efforts and worthy of investment





- Nationally branded campaign
- Designed to raise awareness and change behavior
- Uses internet marketing strategies, a campaign web site, which provides resources
- Created to be 'stepped down' so business, agency, academic, and NGO partners can adapt or adopt resource materials
- Over 600 partners nationally

Help Prevent the Spread of Aquatic Invasive Plants and Animals

BEFORE launching...BEFORE leaving:



- ✓ **Remove** aquatic plants and animals from boat, motor and trailer
- ✓ **Drain** lake or river water from livewell, motor, and bilge
- ✓ **Dispose** leftover live bait minnows and worms in trash
- ✓ **Rinse** boat and equipment with high pressure, hot water, especially if moored for more than a day
- ✓ **Dry** everything for at least 5 days

Protect Your Property and Our Waters

Special Initiative

- Objectives -

- Extend along key invasion corridors targeting resident and non-resident boaters/anglers in three states*
- Develop and implement a strategic multi-media effort using existing and new products
 - Raise awareness among boaters/anglers
 - Expand ownership of lakes/rivers and AIS threats
 - Empower to actively prevent AIS spread
 - Build, empower, and leverage community-based support
- Evaluate outcomes to determine effectiveness



* Two year initiative funded by NOAA/Sea Grant

Stop Aquatic Hitchhikers!TM

- Multimedia -



1. Highway radio messages (TISs)
2. Billboards
3. TV, radio, and newspaper PSAs*
4. Displays at rest areas
5. Kiosks at retail and other outlets
6. Outside ads on gas pumps (toppers)
7. Lawn banners
8. Regulations booklets*
9. Watercraft inspectors*
10. Signs along roadways
11. Signs at water accesses*
12. Windshield flyers
13. Displays at airports (dioramas)
14. Brochures*
15. AIS cards*
16. Stickers
17. Other media

* Methods based on previous surveys

Select Regional Partners

- University of Minnesota Sea Grant Program
- Minnesota, Wisconsin, and Iowa DNRs
- Wisconsin Sea Grant Institute
- Michigan Sea Grant Program
- Wisconsin Department of Tourism
- MN and IA Departments of Transportation
- Iowa Great Lakes Water Safety Council
- U.S. Fish and Wildlife Service
- Wildlife Forever
- U.S. Forest Service
- National Park Service – St. Croix Watershed Research Station
- U.S. Coast Guard Auxiliary-Duluth
- Cabela's
- Clear Channel
- Lamar Advertising
- Babe Winkelman Productions
- Steven Pennaz
- North American Fishing Club
- Minnesota Waters
- University of Minnesota Extension
- Brainerd Lakes Chamber of Commerce
- Hubbard County COLA
- Crystal Pierz Marine
- Dickerson County Inter Lakes
- Dickerson Clean Water Alliance
- Visit Duluth
- Lake Minnetonka Conservation District
- Lake Vermillion Sportsman's Club
- Lake Vermillion Resort Association
- Minnesota Zoo
- Red Lake Band of Chippewa

America's Most WANTED

WANTED DEAD NOT ALIVE
Highland Carp aka Asian Carp
For damaging habitat; Overcrowding the food chain; Injuring boaters

WANTED DEAD NOT ALIVE
Spiny Waterflea
For damaging habitat; Overcrowding the food chain

WANTED DEAD NOT ALIVE
Eurasian Watermilfoil AKA Milfoil
For damaging habitat; Destroying fish habitat; Impeding navigation; Blocking seaports

WANTED DEAD NOT ALIVE
Zebra Mussels
For damaging habitat; Overcrowding the food chain

WANTED DEAD NOT ALIVE
Rusty Crayfish
For damaging habitat; Destroying plants; Consumption of shellfish; Damaging fish eggs

Only You Can Stop Invasive Species

- ✓ **INSPECT** your boat, trailer, and equipment and **REMOVE** visible aquatic plants, zebra mussels, and other animals before leaving a water access.
- ✓ **DRAIN** water from the bait container, livewell, bilge, and transom wells before leaving a water access.
- ✓ **DISPOSE** of unwanted bait in the trash.
- ✓ **SPRAY** boat, trailer, and equipment or **DRY** for 5 days before going to another water body.

These institutions are equal opportunity providers.

Evaluation

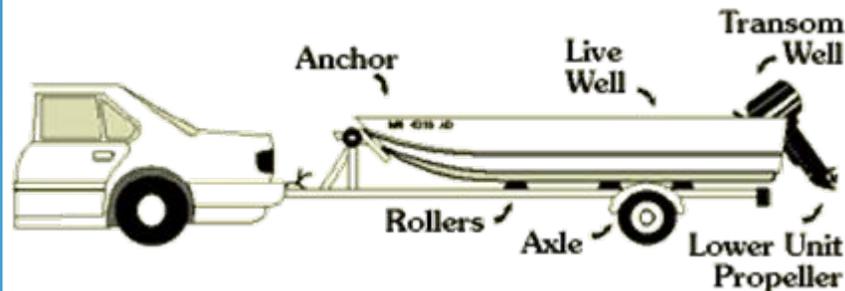
Goal:

- Understand relationship of boaters/anglers exposure to campaign and their behavior

Objectives:

- Determine sources for *SAH!* info
- Find most effective methods to reach them
- Determine if campaign raised their awareness or increased knowledge
- Influenced them to take actions now and future

Emphasize self-inspection:





STOP AQUATIC
HITCHHIKERS!™

Results

- Surveys Administered -

Two surveys: face-to-face and self-administered

- More surveys were administered in Minnesota than the other two states (almost 2:1)
- More location were surveyed in Minnesota (45), than IA (5) and WI (10)

Note: Content has been modified from original presentation for posting on MAGLS Website. Data has been omitted since results are not yet published. Contact Doug Jensen for more info.

Results

- Most Effective Sources for Info -



Gas pump topper ad

We wanted to know what are the most effective sources for information to reach boaters and anglers with SAH! messages:

- For Minnesota, Wisconsin and Iowa, the top five sources for information were quite consistent: signs at water accesses watercraft inspectors, regulation booklets, billboards, and television or radio ads
- Other important methods were also shown

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Results

- To what extent did it raise awareness? -

- Results show campaign raised highest level of awareness among Minnesota boaters and anglers, followed by IA & WI
- It is important to recognize that MN fully implemented many campaign methods, while IA and WI used select methods
- Results for IA and WI are very encouraging!

Overall, 86% of respondents indicated that their awareness was raised a large to moderate amount



Sticker:
Add your
logo here



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Results

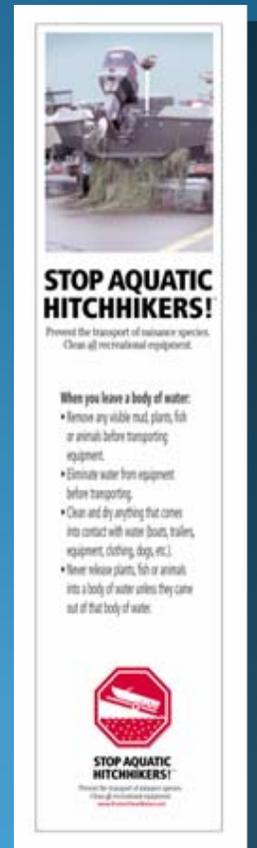
- What extent **WILL SAH!** influence YOU to take action? -

When asked “how likely is it that YOU WILL take special actions in the FUTURE to prevent the spread of AIS?” the survey showed that:

- 99% of Minnesotans will likely take action, compared to 84% in IA, and 88% in WI
- Averaged for all three states, 97% of respondents will be influenced a large to moderate amount to take action to prevent the spread of AIS!

These results show that awareness can translate into behavior change aimed at protecting water resources from AIS

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Newspaper ad

Other Sea Grant Survey Results

- Comparison to Survey Results from 1994 and 2000 -

Previous MN Sea Grant surveys show that public education can not only raise awareness but can change behavior of boaters and anglers:

- A 2000 survey conducted in MN, VT, OH, KS and CA showed that MN and VT boaters had changed their behavior (90% and 82%, respectively) to a greater extent than in other states surveyed
- MN boaters who took action increased to over 90% compared to a similar Sea Grant survey in 1994, which showed that 70% took action.
- Differences among states relate to emphasis placed on public outreach and variety of best methods used to reach boaters
- MN and VT had placed more emphasis and used the best variety of methods to reach boaters compared to the other states

Overall, results demonstrate that AIS public education can significantly change boater behavior to prevent and slow the spread of AIS

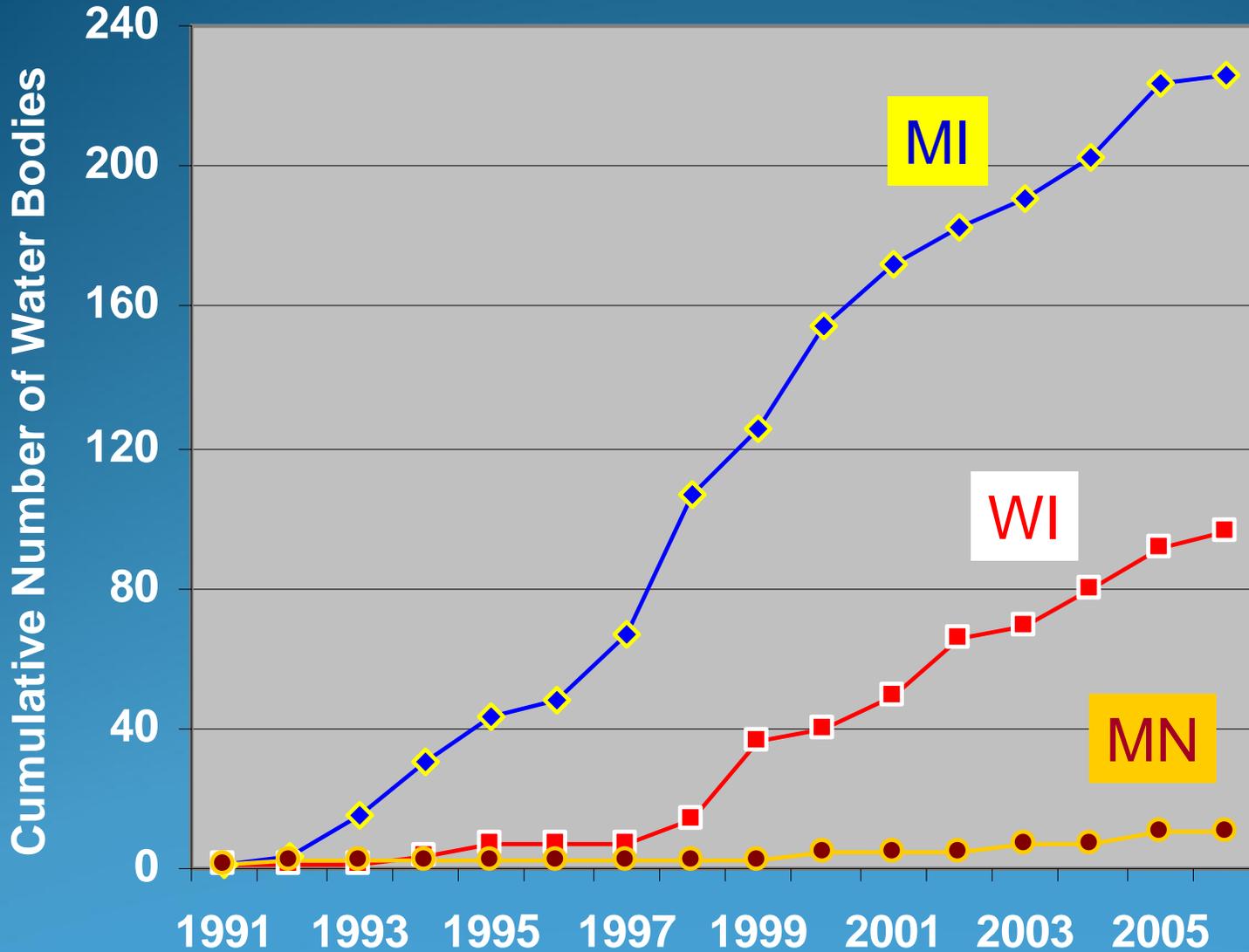
Boater AIS Education Works! - The Case for Minnesota -

The Pieces Fit Together:

- Boater awareness/behavior is influenced by education
- Watercraft inspections show that frequency of aquatic vegetation decreasing on boats
- AIS spread has been prevented or slowed:
 - EWM infested lakes found each year continues at half rate previous to 1993*
 - Zebra mussels nearly held at doorstep for a decade
 - Eurasian ruffe (1986) and round goby (1995)

* Some infested lakes found each year are connected to previous infested waters

Preventing Spread of Zebra Mussels

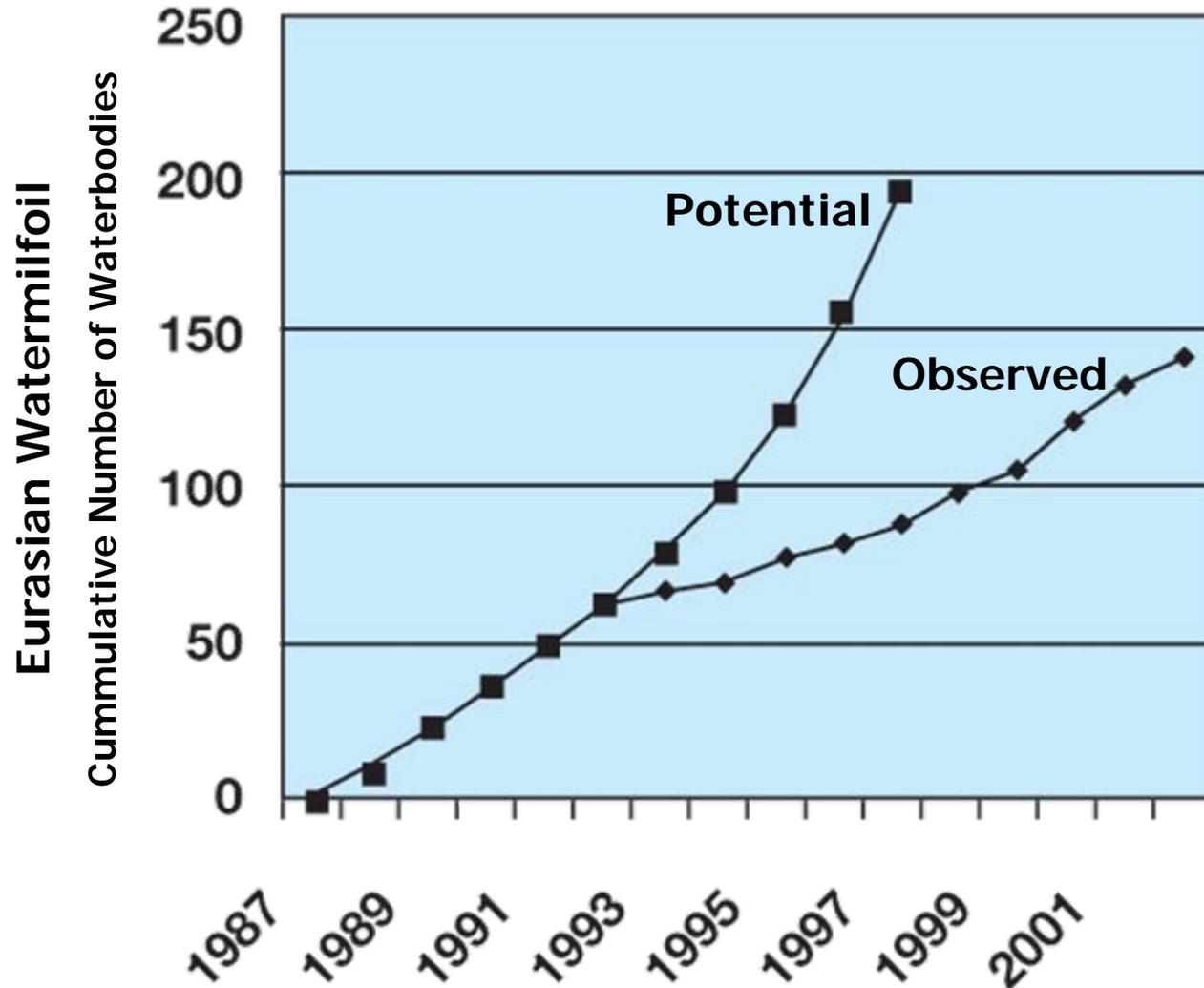


✓ Spread much more where not emphasized

Data courtesy:
Minnesota DNR
Invasive Species Unit

* more water accesses in MI and WI, but MN has just as many boaters and more water

Efforts Slowing Spread



Stop Aquatic Hitchhikers!

Summary and Conclusions

- SAH! provides a platform to help protect water resources, jobs, and economic viability
- Promotes simple and consistent messages and actions that invites boaters to be part of the solution
- Unifies business, tourism, industry, government, and academia with boaters & anglers
- Successes justify expending more resources on outreach because of demonstrated return on this investment
- Continued evaluation in 2007 (analyses in progress)



New Sign at Accesses



Billboard near I-Falls

STOP AQUATIC HITCHHIKERS!

Minnesota waters are threatened by many invasive species of plants and animals. It is illegal to transport any aquatic plants, the ruffe, round goby, zebra mussel, sea lamprey or other prohibited invasive species on public roads, or to launch a boat or trailer with these species attached.

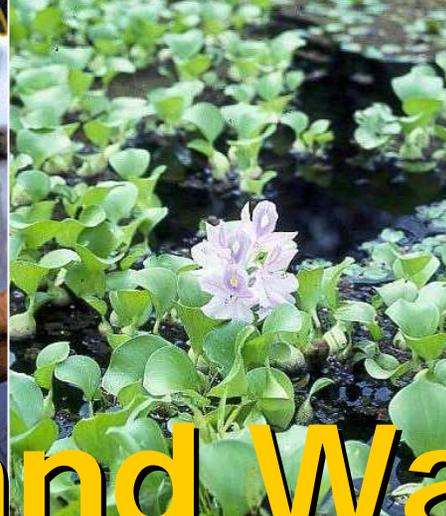
How you can help stop their spread:

- ✓ **Remove** visible aquatic plants and animals from your boat, trailer, and other boating equipment **before** leaving the water access (*see diagram*).
- ✓ **Drain** water from your boat, motor, live well, and bait containers **before** leaving the water access.
- ✓ **Spray, rinse, or dry** boats and recreational equipment to remove or kill species that were not visible when leaving a water body. **Before** transporting to another water body:
 - ★ **spray / rinse** with high pressure and/or hot tap water (above 104°F or 40°C) especially if moored for more than a day; or
 - ★ **dry** for at least 5 days.
- ✓ **Dispose** of unwanted bait in the trash.

For more information, contact the DNR Invasive Species Program, Ecological Services, at (651) 296-2835 or (888) 646-6367.

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Info in reg booklets



Aquarium and Water Garden Releases in Minnesota and Wisconsin



Aquarists and Water Gardeners Abound!

Aquaria/Fish Raising:

- An important part of our culture
- 13M+ U.S. households maintain aquaria with thousands more in offices, restaurants, etc...
- Various specialties contribute to strong industry



Water Gardening:

- Over \$1 billion annually spent on water garden industry nationally
- Fastest growing garden and landscaping trend
- *Parade of Ponds* (TC) grew from 16 in 2001 to >100 sites in 2002; two weekends in 2004
- MWGS grew to >500 members in <5 years



Get Habitattitude™

- Launched in 2004, a national education campaign created by a unique partnership of industry, academia and government
- Focuses on raising public awareness, engaging people, promoting unifying environmental messages with corresponding beneficial actions
- All segments of industry are part of the solution





Alternatives to Release

- ✓ Contact a retailer for proper handling advice or for possible returns
- ✓ Give/trade with another aquarist, pond owner, or water gardener
- ✓ Donate to a local aquarium society, school, or aquatic business
- ✓ Seal aquatic plants in plastic bags and dispose in trash
- ✓ Contact a veterinarian or pet retailer for guidance on humane disposal of animals





Survey Results

- Attitudes and Releases -

For the first time, survey info was gathered concerning consumer attitudes toward release of fish and aquatic plants. We were pleased to discover that a majority of consumers felt that (in descending order): release is preventable, (they should) never release unwanted fish, etc., release is an environmental problem, owners are responsible for release, and release is convenient

Results of the survey also showed, unfortunately, that over the last 3 years that at least 50 release events had occurred in communities surveyed. If we extrapolate those release events to the community population and then to a statewide population, there are likely hundreds if not thousands of releases occurring in those states as well as across the United States and Canada

This behavior is likely reflective of a small but significant proportion of consumers not knowing the unintended consequences of their actions

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Get Habitattitude!

Habitattitude™
PROTECT OUR ENVIRONMENT
DO NOT RELEASE YOUR AQUARIUM FISH

Release or escape of fish and plants from aquariums and water gardens can harm Minnesota waters and native species.

Besides not being good for the environment, it is illegal in Minnesota.

Sea Grant, Minnesota Department of Natural Resources, and other partner logos.

www.Habitattitude.net

FREE CHILD ADMISSION

Underwater Adventures
AQUARIUM
WILKINSON

Valid for one free child (ages 3-12) admission to Underwater Adventures Aquarium with the free office purchase of a full-price adult admission.

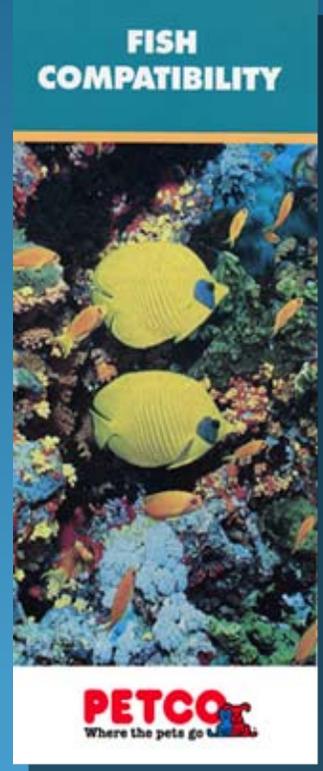


Survey Results

- How to Reach Consumers -

Top 8 categories (very/somewhat effective) were:
pet store personnel, in-store signs, brochures,
Internet, books/libraries, followed by
newsletters/TV/magazines

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Features
logo inside

PETCO's Commitment To Protect Our Environment

Habitatitude™

At PETCO, Animals Always Come First!

Habitatitude™ is a "conservation state-of-mind" that commits to environmental protection by not releasing unwanted fish or aquatic plants into public areas.

PETCO fully supports Habitatitude™. Habitatitude™ is a national initiative developed by the Aquatic Nuisance Species (ANS) Task Force in partnership with the Pet Industry Joint Advisory Council (PIJAC), U.S. Fish and Wildlife Service, Sea Grant and NOAA.

Habitatitude™
PROTECT OUR ENVIRONMENT
DO NOT RELEASE FISH AND AQUATIC PLANTS

Pet Care
Sheet





Survey Results

- Release Risk -

- About 1/3rd of respondents had unwanted fish, plants, snails etc. in the past 3 years
- About 1/5th of those with unwanted fish etc. released them into local waters
- 50 releases in past 3 years
- Most releases in Erie, PA and least in Duluth, MN

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Survey Results

Habitattitude™

An important aspect of the survey was to gauge consumer reactions to the campaign's logo and messages. We were extremely pleased to find out that an overwhelming majority liked the brand on various levels

Ninety % or more felt that both were: acceptable to me, easy to understand, attractive, (left a) positive impression, and (sent a) clear message

A strong majority also felt like both encouraged support/purchase of retail products

These results show that the campaign's logo and messages relate well to consumers



Trade magazine ad

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Survey Results

Habitattitude™

Most importantly from a natural resource conservation point of view, we wanted to know if the campaign and its messages is well positioned to make a difference to increase awareness and lead to a sustained behavior change.

An overwhelming number of consumers indicated that the campaign will (very or somewhat likely) increase: public awareness, knowledge and change THEIR behavior. They also ranked high: change attitudes and change behavior of others.

So, results suggest that the campaign is an excellent position to achieve our collective goal of influencing behavior resulting in natural resource protection.

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Habitattitude™

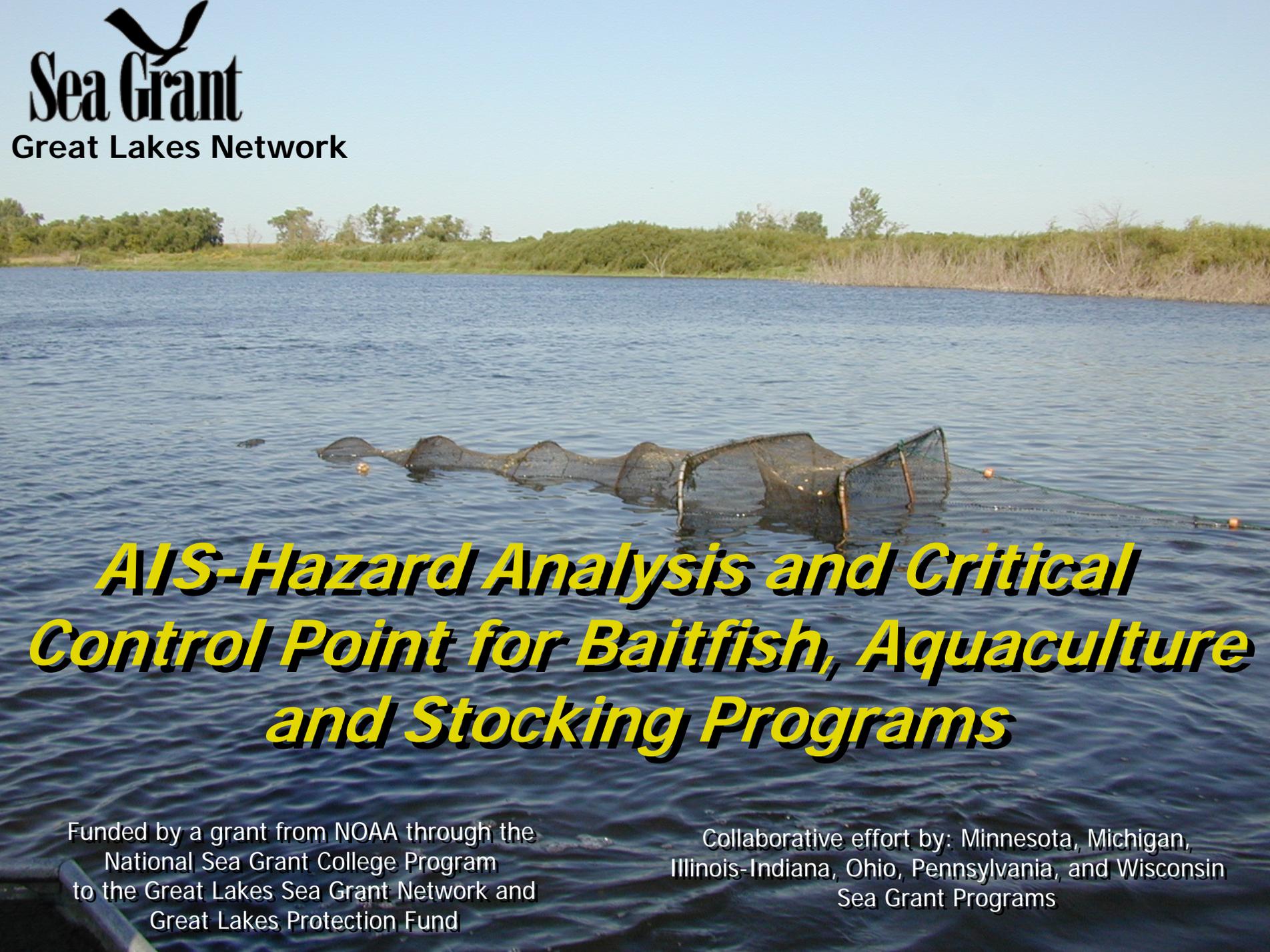
Summary/Conclusions

- Results establish first link between AIS, conservation and consumer attitudes toward hobby
- Campaign well positioned as a communication platform to address releases by affecting behavior change resulting in environmental protection
- Make *Habitattitude* a top priority for 2008





Great Lakes Network



AIS-Hazard Analysis and Critical Control Point for Baitfish, Aquaculture and Stocking Programs

Funded by a grant from NOAA through the National Sea Grant College Program to the Great Lakes Sea Grant Network and Great Lakes Protection Fund

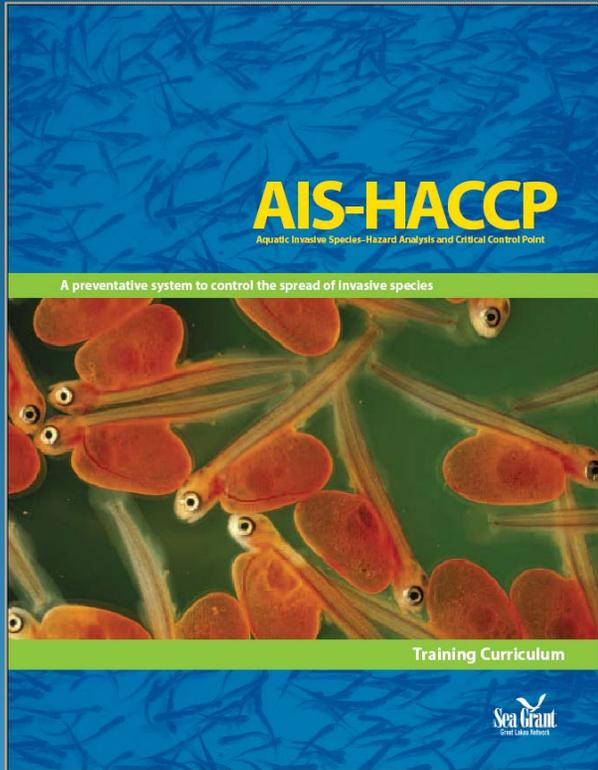
Collaborative effort by: Minnesota, Michigan, Illinois-Indiana, Ohio, Pennsylvania, and Wisconsin Sea Grant Programs

AIS-HACCP Approach

Hazard Analysis and Critical Control Point

- Concentrates on the points in the process that are critical to prevent contamination or spread via the product, equipment, and water
- Fish farmers, hatchery operators and other audience segments are using to significantly reduce or eliminate risk for spread
- HACCP proven to be a good partnership between industry and regulators

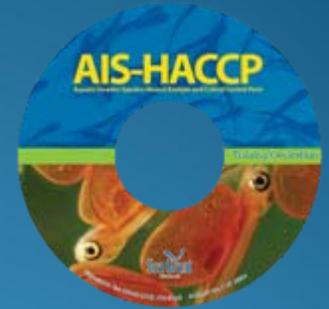
AIS-HACCP Training Materials



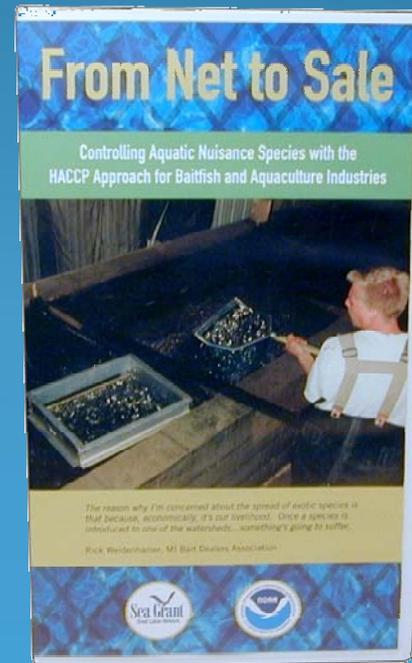
Curriculum



CD with
resources



Supporting
training video
(22 min)



Impacts and Outcomes

- Over 3,200 curriculum manuals, 1,700 resource CDs, 3,500 videos/DVDs, 6,400 bait shop posters, 550,000 bait bucket stickers were distributed
- Over 600 private, state, federal, and tribal representatives from over 30 states, and the Province of Ontario have been trained through workshops held in 20 states
- U.S. Fish and Wildlife Service has adopted AIS-HACCP and developed 114 AIS-HACCP plans in 24 states
- The Great Lakes Indian Fish and Wildlife Commission has developed AIS-HACCP protocols for their resource management work

AIS-HACCP

Summary/Conclusions

- Advantages are flexibility and adaptability within private and public aquaculture and hatcheries
- Concentrate on control measures that are operation and AIS-specific
- Provides public hatchery managers, fish farmers, and bait harvesters, and area fishery managers, an opportunity to prevent the spread of AIS, including viruses
- AIS-HACCP can reduce impacts on industry resulting from unnecessary, ineffective, or unenforceable regulations

Conclusions

- Public education a priority – because it works!
- Use strategic approaches that target pathways
- Adapt or adopt approaches and materials
- Use guidelines that target each audience
- Avoid fallacies & jargon
- Form community partnerships and those with business and industry



Suggestions for Michigan

- Find dedicated funding for comprehensive response: prevention, watercraft inspection, monitoring, research, policy and enforcement
- Make illegal the transport of any aquatic plants, prohibited species, and contaminated water on public roads
- Fully implement these successful approaches:
 - *Stop Aquatic Hitchhikers!*
 - *Habitattitude™*
 - *AIS-HACCP*

We're Loading the Dice...