

Don't move a mussel:
meeting the invasive species challenge

Eileen K.N. Ryce
Crown Managers Forum
March 14, 2011



*Montana Fish,
Wildlife & Parks*

Invasive Species Facts

- Since Columbus' arrival 50,000 species have been introduced into North America.
- Impact nearly half of the species currently listed as Threatened or Endangered under the U.S. Federal Endangered Species Act.
- Globally, damages cost \$1.4 trillion annually.
 - US-\$123 billion/yr in economic loss.

What are Aquatic Invasive Species?

- Non-native
- Plant, animal or pathogen
- Threaten
 - Ecological stability
 - Diversity or abundance of native species
 - Commercial, agricultural, aquacultural, or recreational activities

How are they introduced and spread?

- Ballast water discharge
- Fish farm and pond escapement or release
- Intentional introductions
- Aquaria dumping
- Baitfish release
- Angler and boater hitch-hikers
- Field workers
- Fire Fighters
- Gardening
- Birds and other animals acting as vectors



What makes a good invader?

- Have a method for introduction and spread
- They are very accommodating, very hardy and very adaptable
- The animals are generally voracious eaters and very prolific
- The plants are typically aggressive colonizers that spread quickly
- Once established they can be nearly impossible to get rid of

Montana State Statutes & Rules

- Fish Health and Import Statutes (87-3-209 through 87-3-277 MCA)
 - Requires permits for importation, including health certificates
 - Provides for inspection, quarantine and disinfection of fish culture facilities
- Leech Rules (12.7.540 through 12.7.542 ARM)
 - Regulation of leech importation and development of approved leech dealers
- Importation, Introduction and Transplantation of Wildlife Statutes (87-5-701 through 87-5-721 MCA)
 - Authority to regulate importation, introduction and transplantation of wildlife species, including aquatics
- County Weed Act and Noxious Weeds List
 - Eurasian Watermilfoil, Flowering rush, Salt Cedar, Yellowflag Iris, Purple loosestrife

Montana Aquatic Invasive Species Act 2009

- Montana Aquatic Invasive Species Act
 - Invasive species account
 - Cooperative agreements for detection and control
 - Rulemaking authority
 - Invasive species “Management Areas”
 - Possession and transfer prohibited
 - Penalties: misdemeanors and felonies

Dollars

- Money is a scarce resource
 - Without money we can't find solutions
 - Other national initiatives have the ear of legislators
 - Health care, social programs, defense, disasters, etc.
- No real solution to the problem, science is developing
 - Once infested control difficult and costly
 - Endless number of threats
 - Seemingly endless number of vectors
 - Prevention is key, yet unwillingness to make sacrifices in the way we 'do business'
 - Difficult to measure success
- Unless decision makers understand the issue, money will remain scarce

Change

- No one likes change
 - We've always done it this way
 - That's a lot more work
 - The spread is inevitable
 - What about that guy?

Change is necessary



This photo doesn't have any direct relevance to *Fisheries*, but your editor thought the membership might like to share the view.



Change continued...

- We need to change behavior
 - Regulations
 - Education/Awareness
- Must be directly relevant for true change

Why are we concerned?



Do you fish?



Fisheries Impacts

Competition

- Filter feeders- up to a liter a day.
- Reductions in density and biomass of the zooplankton community may result in reduced growth or abundance of age-0 fish

Water quality/habitat

- Increase in algal blooms
- Habitat/spawning area degradation

Recreation

- Sharp shells cut fishing line

Photo Credit: Marc Murrell











Are you a birder? Do you hunt waterfowl?

- Bioaccumulation of toxins
 - Selenium, avian botulism
- Bird population decline



Do you like the beach?

- Sharp shells will cut unprotected skin
- Disturbing odor
- Increase in toxic algal blooms





Do you irrigate crops or water livestock?



Do you use electricity?
Do you drink water?



- WHO IS IMPACTED ?

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- WHO IS NOT IMPACTED ?

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- IS IT FARE ?

Montana AIS Program

- AIS Management Plan since 2002
- Statewide coordinated effort since Feb 2004
- Primary funding source: ANS Task Force/US FWS
- Program Priorities
 - Regional and Statewide Coordination
 - Education
 - Control and prevent spread
 - Monitor and detect
 - Rapid response

Montana facts

- 750,000 acres of recreational water
- Over 80% of boat owners are anglers
- 33% of all MT adults are licensed anglers
- 41% licensed anglers are non-residents
- 800,000 non-resident angler days/year, 30% of the angling pressure
- \$252 Million spent by anglers in 2005

Prioritizing Prevention and Monitoring

- Angler/boater surveys
 - Movement data
 - Cleaning habits
- Waterbody size and use
- Pressure surveys
- Calcium levels

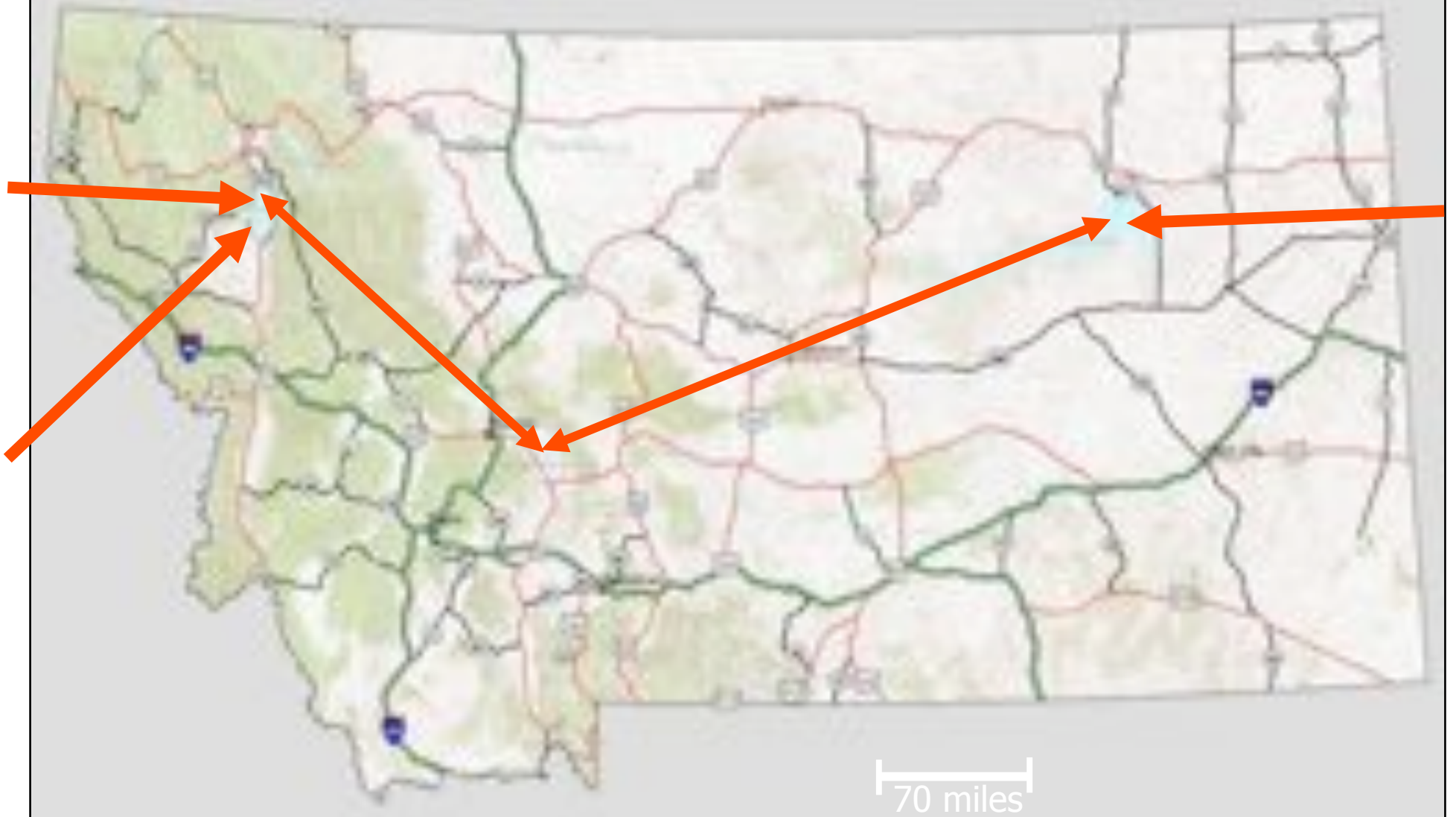


Risk of introduction

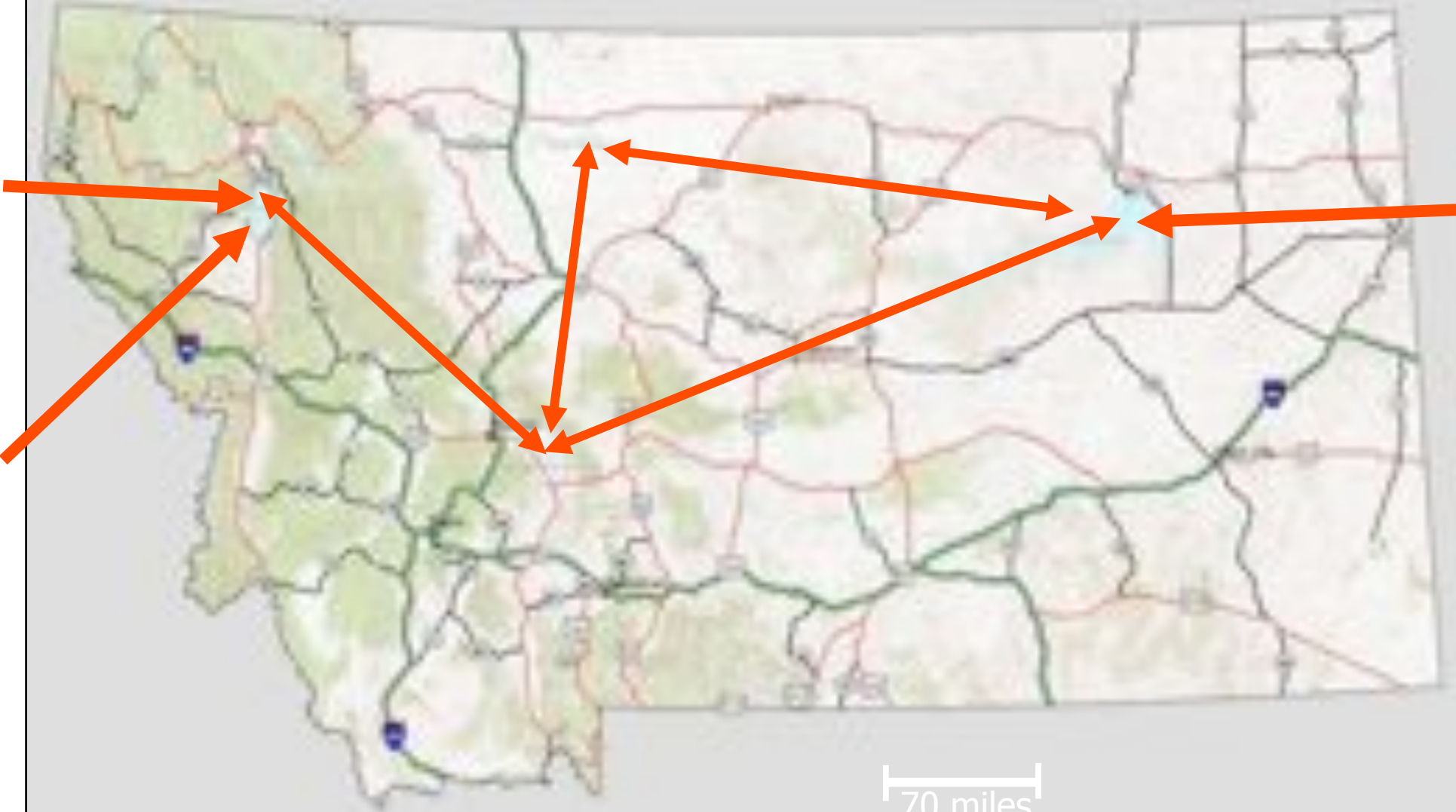
Boater Movements



Boater Movements

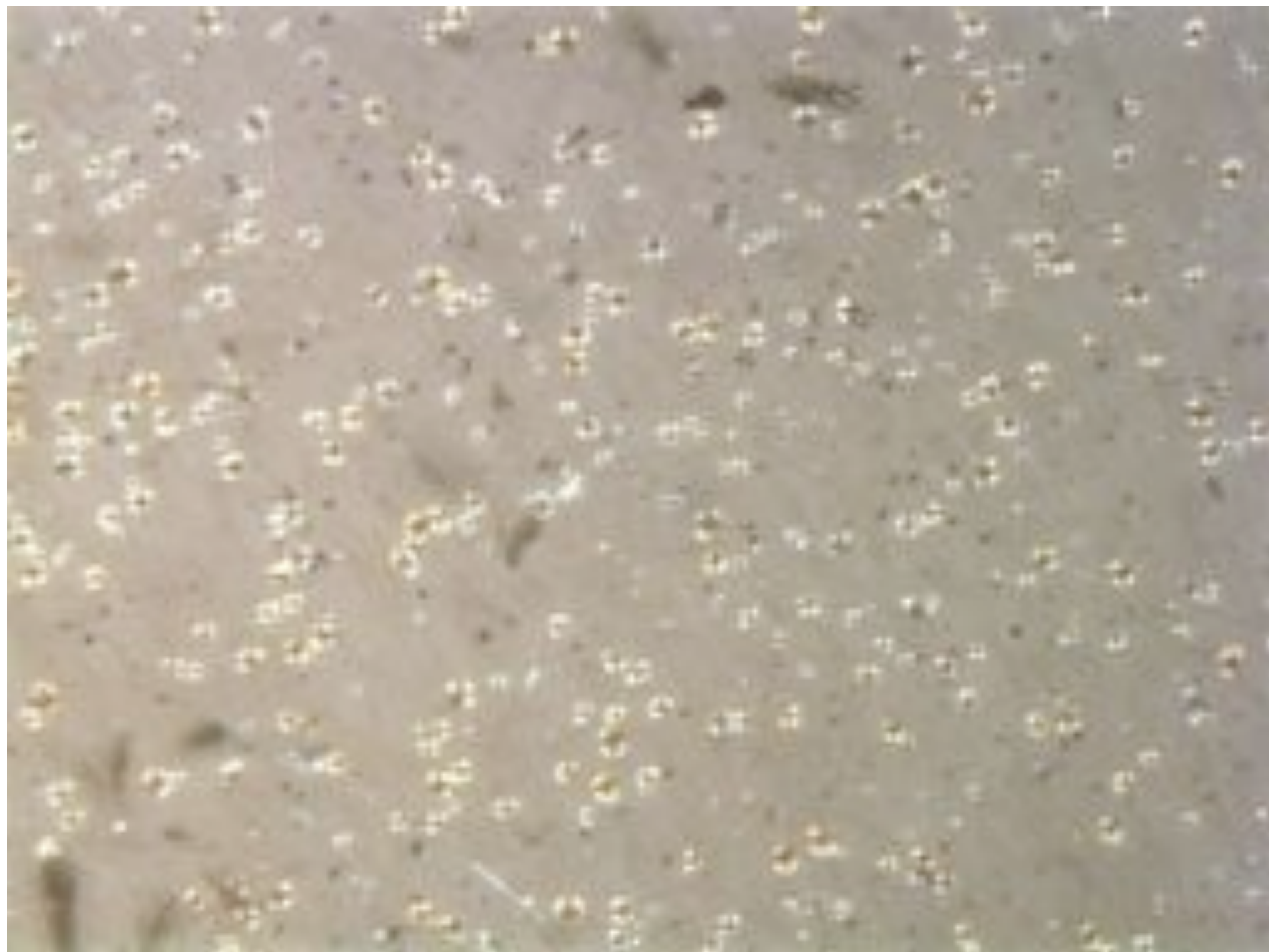


Boater Movements



Priority Species in Montana

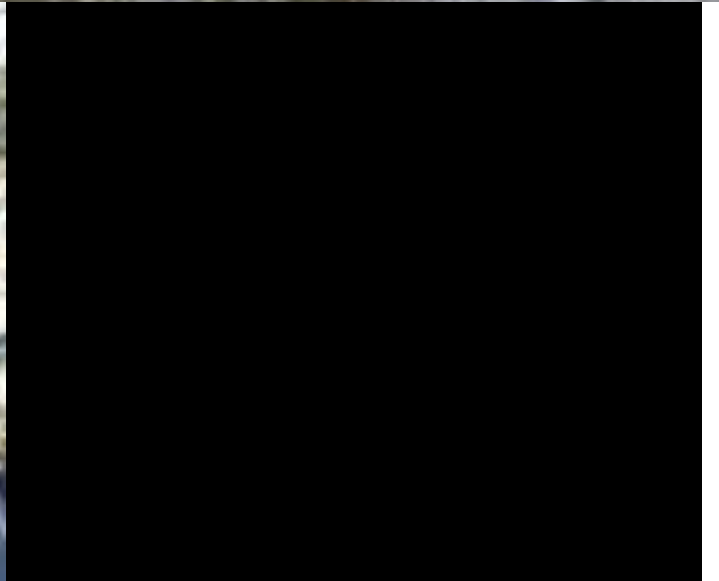
- Zebra/Quagga Mussels
- Asian Carp (Grass, Bighead, Black and Silver)
- VHS Virus
- Aquatic weeds (e.g.. Hydrilla, Brazilian Elodea)
- Illegal fish introductions (e.g. Snakeheads)
- Eurasian Watermilfoil
- New Zealand Mudsnails
- Whirling Disease



Plankton Sampling



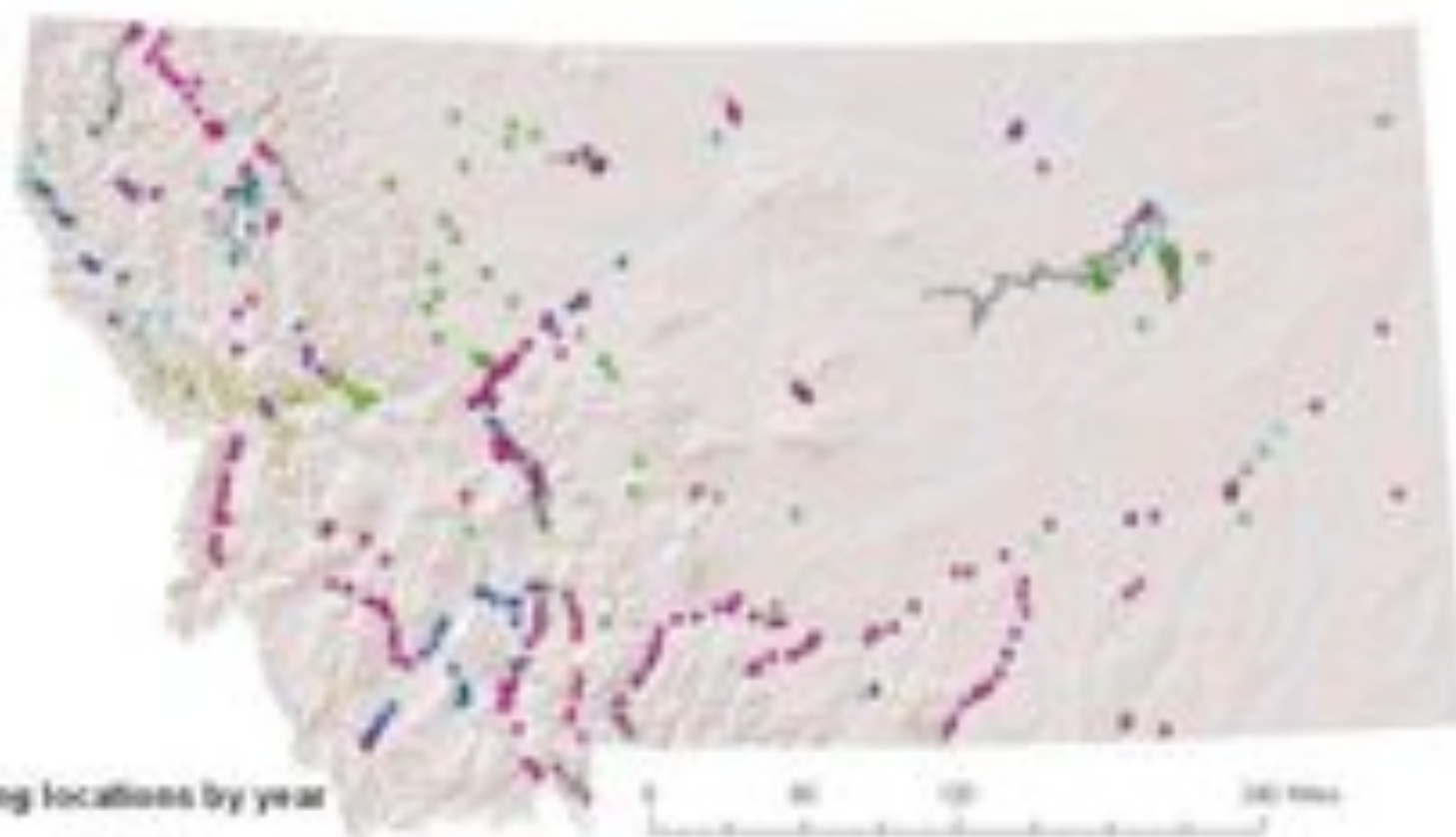
- 63 um net mesh size, towed vertically to lake surface
- 3 tows per site
- Preserve with 95% ethanol, 1:1 ratio
- View under cross polarized light







ANS Sampling Locations



Sampling locations by year

- + 2000
- + 2001
- + 2002
- + 2003
- + 2004

AIS Early Detection Monitoring Locations 2010



Prevention Strategies

- Public awareness
- Agency awareness
- Prevent introductions directly
 - Importation evaluations (exotic wildlife and fish species, agency and non-agency)
 - River basin monitoring
 - Hatchery inspections
 - Border interceptions
 - Boat ramp interceptions



ANS FREE!



*Montana F
Wildlife & F*

Signed: _____ Date: _____



2010 FWP Watercraft Inspection Locations



Michigan Fish,
Wildlife & Parks

With just three easy steps, you can do your part to help **stop the spread** of aquatic invasive species like plants, mussels and whirling disease

INSPECT. CLEAN. DRY.



**STOP AQUATIC
HITCHHIKERS!**

This message brought to you in partnership by Montana Department of Agriculture and Montana Dept. of Water & Irrigation

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