Minnesota DNR Invasive Carp Briefing

Grace Loppnow | Invasive Fish Consultant
Heidi Wolf | Invasive Species Program Supervisor

DEPARTMENT OF NATURAL RESOURCES

CLEAN WATER LAND & LEGACY AMENDMENT

U.S. FISH & WILDLIFE SERVICE

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

Background on Invasive Carp in Minnesota

Earliest Captures

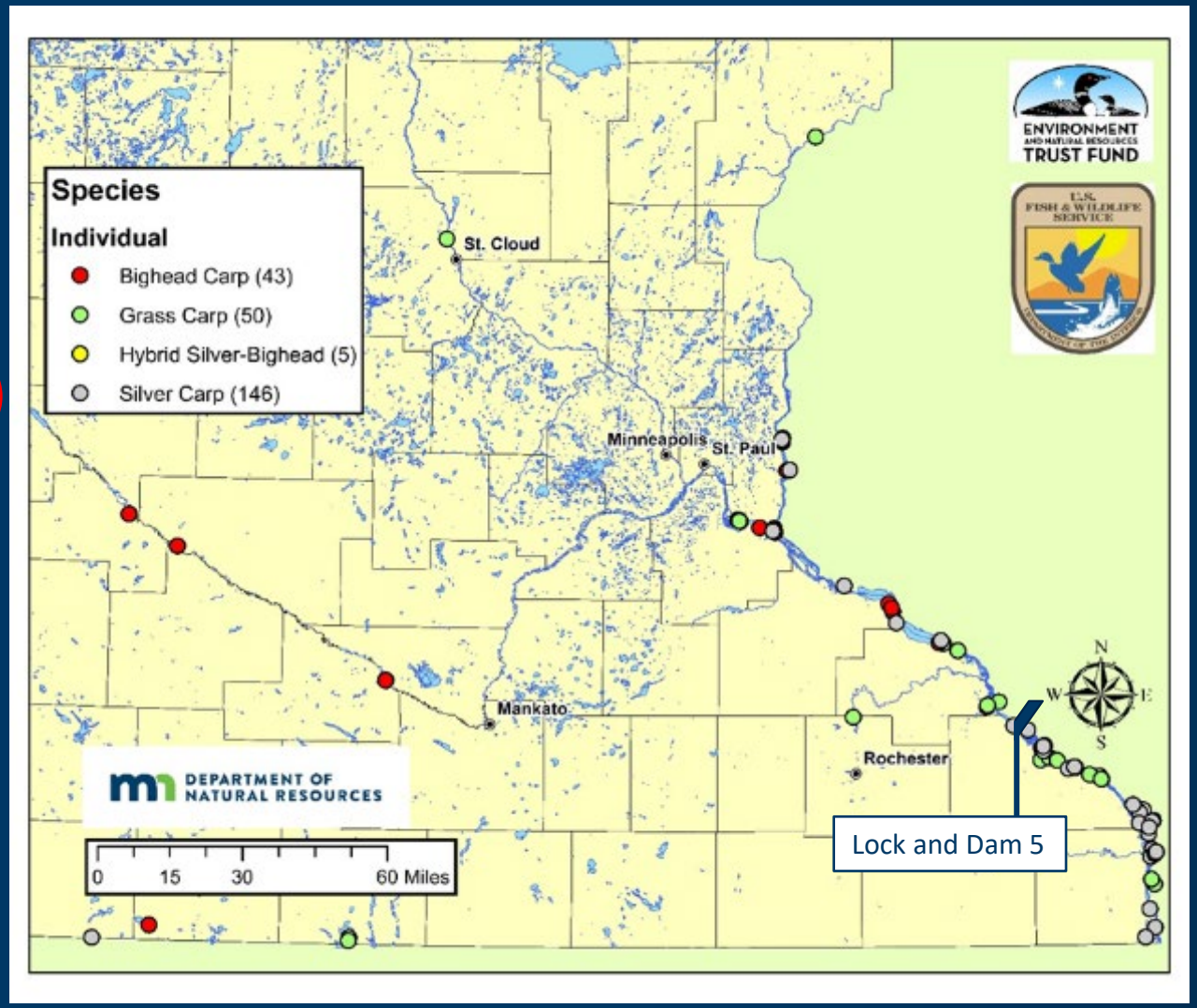
Grass Carp (1977)

Bighead Carp (1996)

Silver Carp (2008)

Black Carp (N/A)

Map of Captures 1977-2021



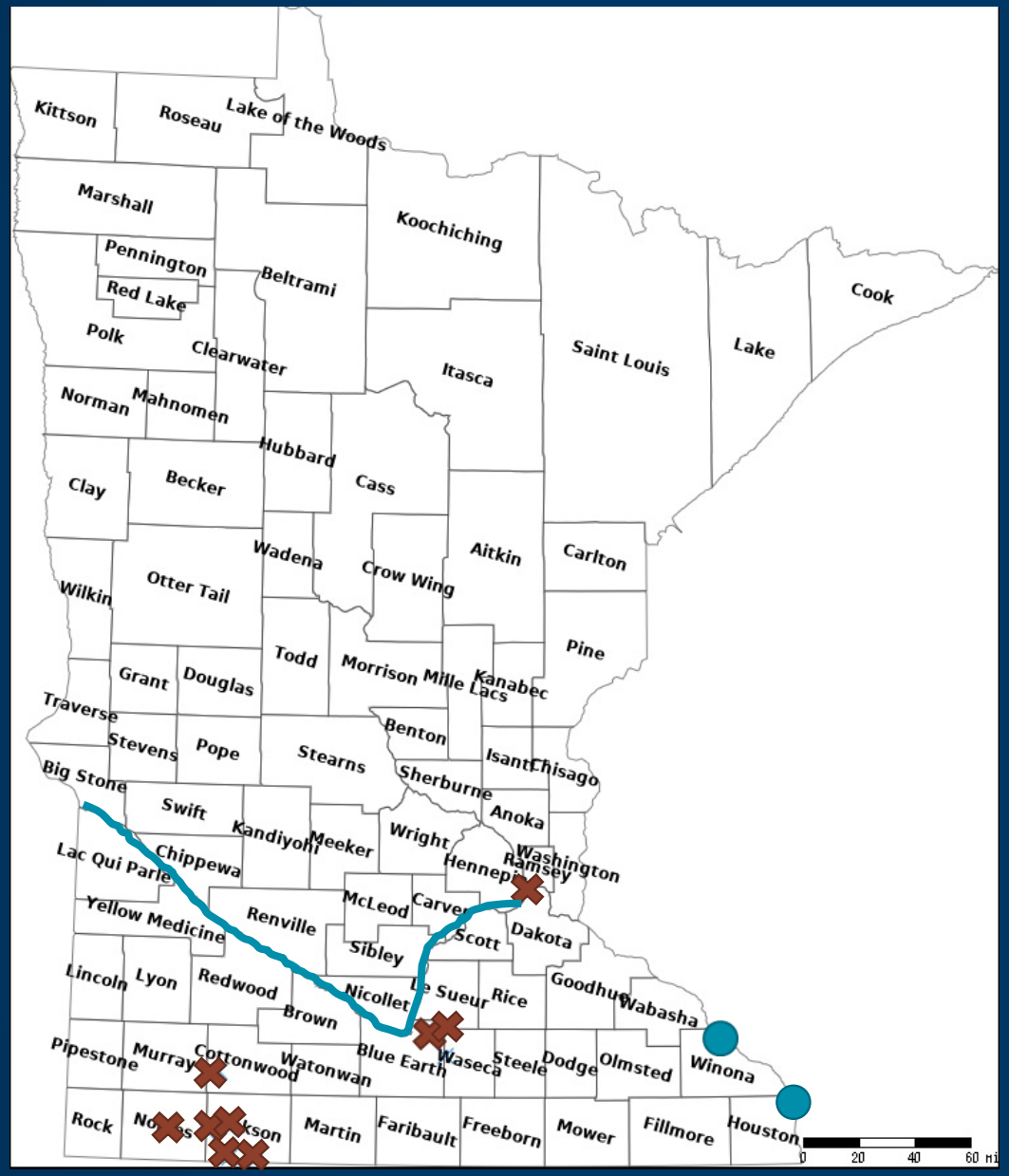
MNDNR Invasive Carp Program

- Working on invasive carp since Governor Dayton's summit in 2011
- LSOHC appropriation: $7.5 million in 2012
- Currently funded by combination of base funds, ENRTF, and USFWS grants
- Prevention, monitoring, research, coordination, and response activities

2012 LSOHC Appropriation

- ML 2012, Ch. 264, Art. 1, Sec. 2, Subd. 5(h): $7,500,000 in the second year is to the commissioner of natural resources for design, construction, including acquisition, operation, and evaluation of structural deterrents for invasive carp to protect Minnesota's aquatic habitat.
- A total of 7 activities were completed with this funding

2012 LSOHC Appropriation cont.

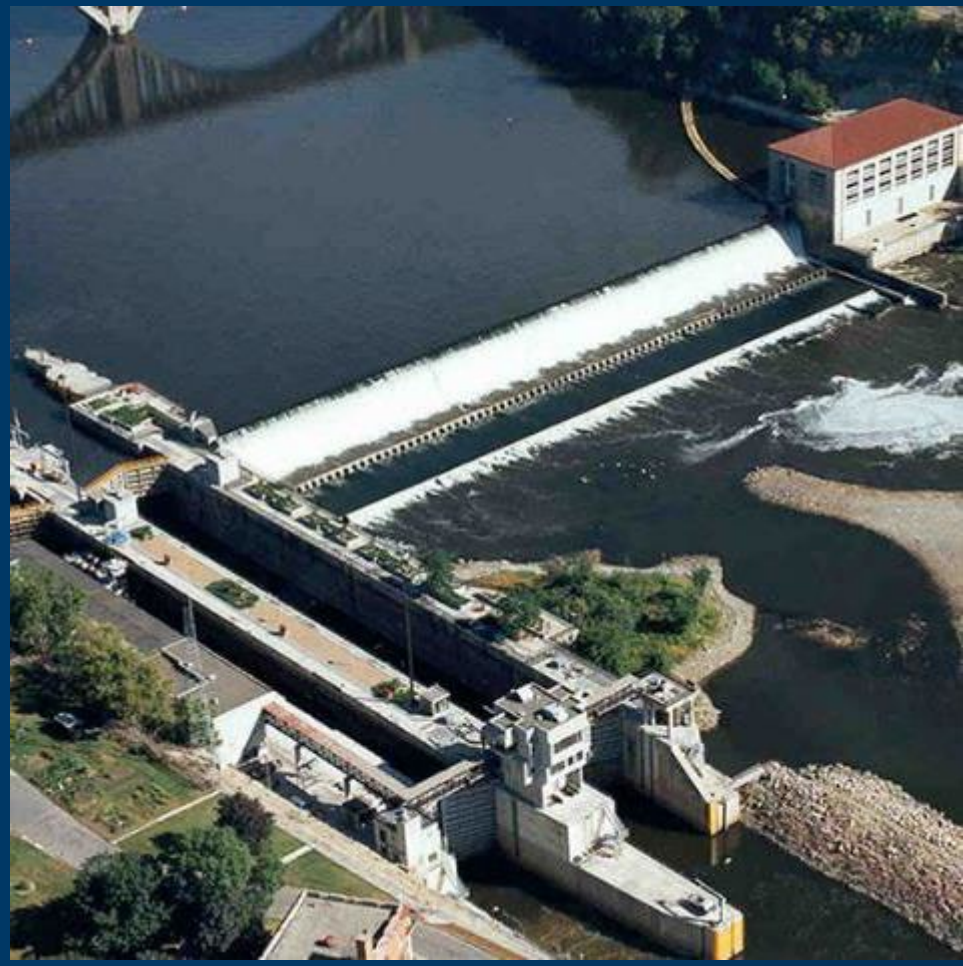


Deterrent installed or designed

Study of deterrent feasibility conducted

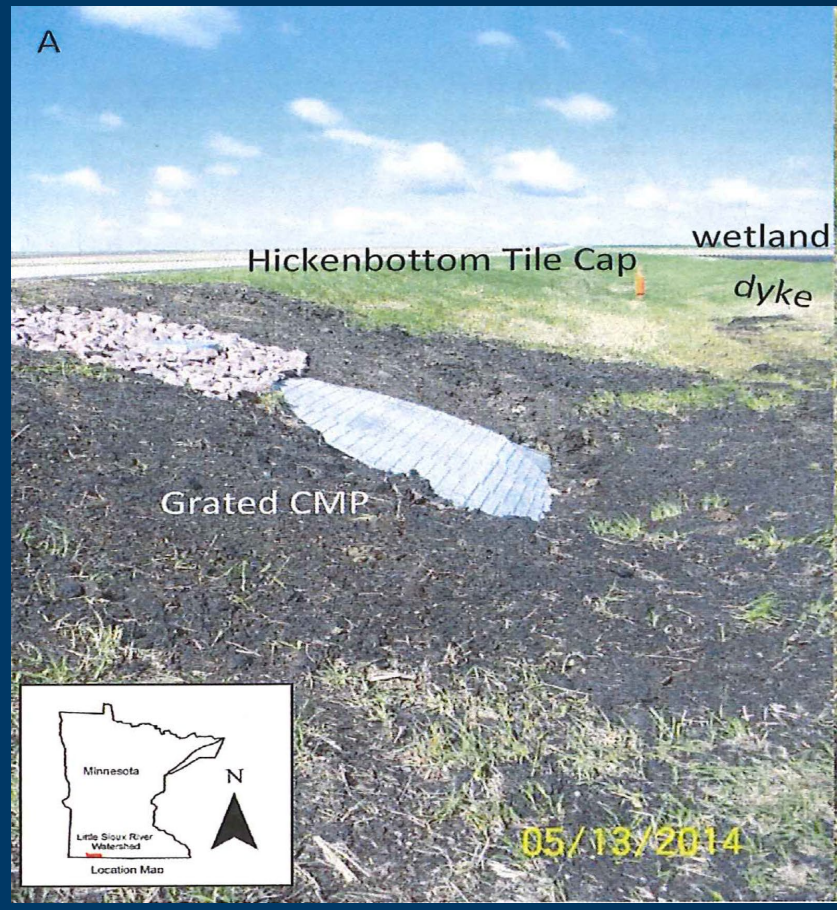
Activity 1: Design of electric deterrent at Lock and Dam 1

- Contracted Smith-Root Inc. and Barr Engineering for full design of electric deterrent at Lock and Dam 1 on Mississippi River
- Estimated cost to build: $8-74 million depending on type of deterrent and placement
- Lower St. Anthony Falls Lock permanently closed in 2015, making deterrent at Lock and Dam 1 unnecessary



Activity 2: Plug watershed breaches in Missouri River basin

- DNR identified watershed breaches where invasive carp could enter Minnesota from Missouri River basin
- 7 sites blocked by either removing culverts, building berms, adding screens, or installing electric deterrents
- Invasive carp are now abundant in the Missouri River basin; these projects have protected SW Minnesota

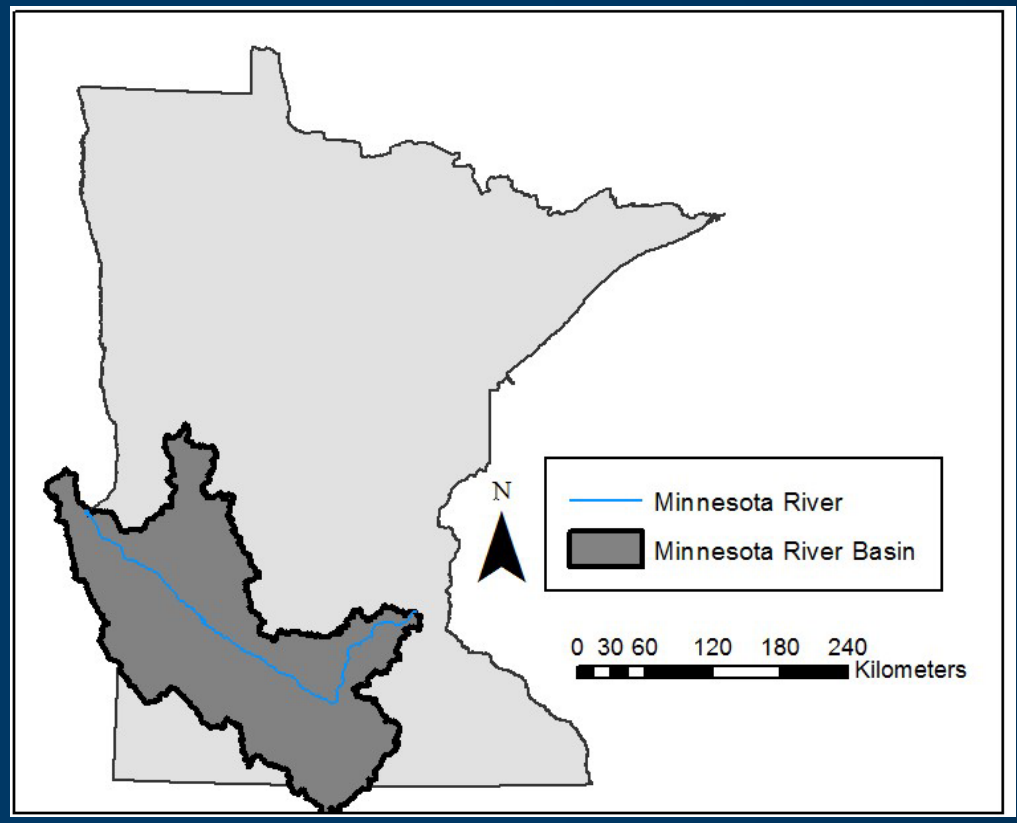


Activity 3: Cost share for deterrent at Lower Gar Lake outlet

- Cost share with Iowa DNR to install electric deterrent to protect Iowa Great Lakes and SW Minnesota waters
- Paved the way for future collaborations with Iowa including larval monitoring

Activity 4: Evaluate deterrent for Minnesota River

- Contracted with Minnesota State-Mankato to study feasibility of installing a deterrent on the Minnesota River
- Conclusion: high variation in flow and channel width, potential impacts on native fish, flooding make a deterrent impractical
- Study characterized the river and provided valuable information on connectivity



Activity 5: Evaluate deterrents at locks and dams

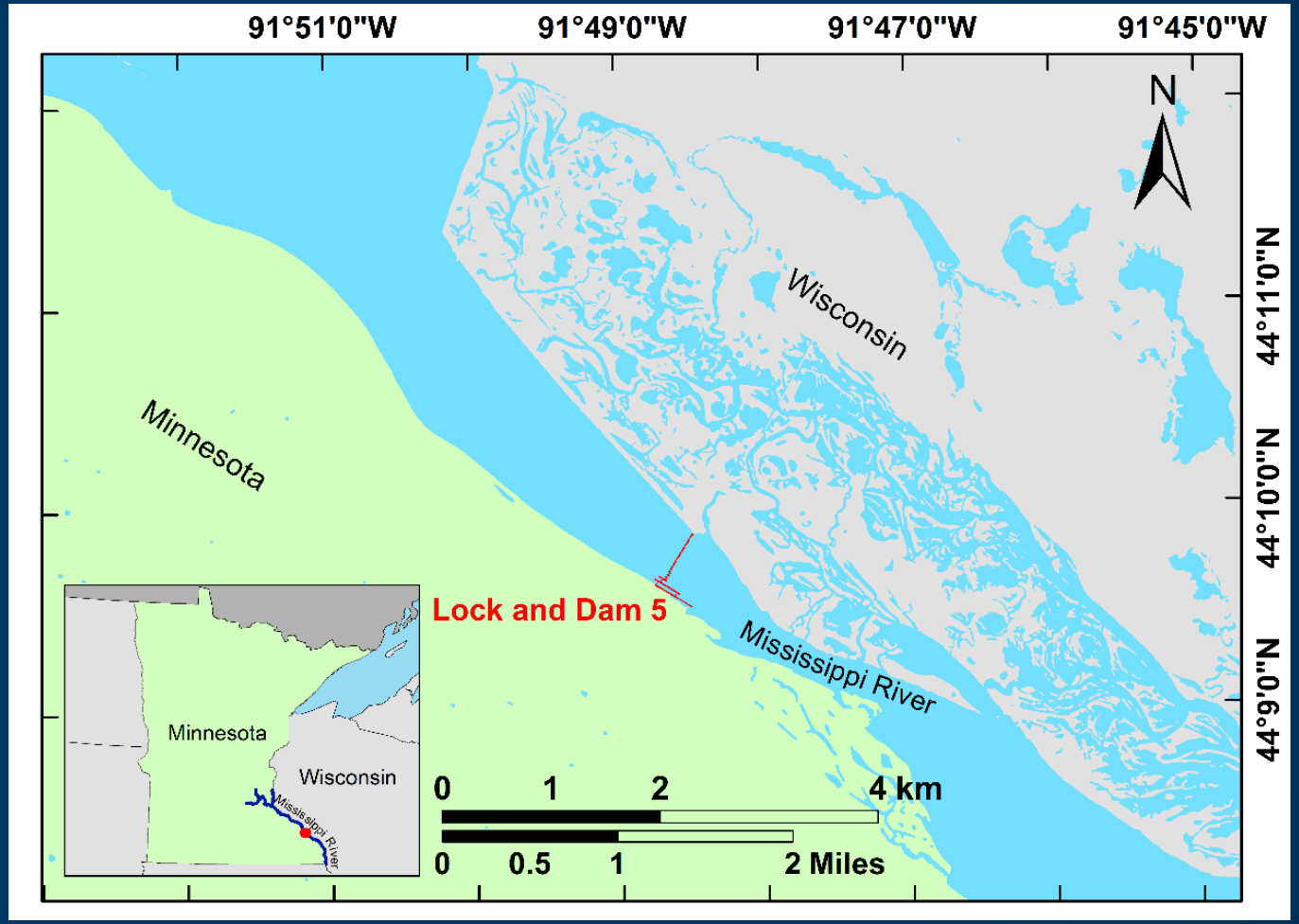
- University of Minnesota evaluated feasibility and efficacy of flow modifications and an acoustic deterrent
- Monitored fish passage at Lock and Dam 2, found most passage during open river
- Fish passage modeling
- Evaluated efficacy of acoustic deterrent at Lock and Dam 8, low efficacy

Activity 6: Electric deterrents on Minnesota River tributaries

- 2 sites near Mankato identified as priority locations for deterrents to prevent movement into area lakes
- Madison/Eagle Lakes and Elysian/Buffalo Lakes electric deterrents designed, permitted, and constructed by February 2019

Activity 7: Evaluation of deterrent at Lock and Dam 5

- University of Minnesota-Duluth evaluated feasibility of BAFF deterrent at Lock and Dam 5
- Study identified several factors that would affect efficacy of deterrent, and recommended against installing deterrent



Next steps

- While much has been done, DNR agrees that action on invasive carp must continue
- Invasive Carp Action Plan due for update
- Initiating a Structured Decision-Making (SDM) process to evaluate options and update the Action Plan
  - Transparent, comprehensive
  - Incorporate diverse stakeholders and experts; all partners who need to be at the table

Structured Decision-Making Process

- Examine all potential management options including Lock and Dam 5 option
- Analyze tradeoffs to arrive at best management actions
- DNR is finalizing a contract with USGS for facilitation
- If interested in participating, please email grace.loppnow@state.mn.us with subject: SDM Process

Today: MNDNR continues to work on invasive carp

- Work with contracted commercial fishers to capture invasive carp
- Conduct targeted sampling for adults, juveniles, eggs, larvae
  - No reproduction detected in Minnesota
- Work with the public and other commercial fishers to verify reports of encounters
- Tag and track invasive carp to learn movement patterns and use as traitor fish
  - Current tagged invasive carp known to be in Minnesota waters: 1 bighead carp in St. Croix, 1 silver carp in Pool 5A, 1 silver carp in Pool 9
- Test new technologies for monitoring and response
- Lead Modified Unified Method events

Modified-Unified Method (MUM) Events

- In response to increased captures in Pool 8
- Modified-Unified Method uses sound, electricity to herd carp into blocked off “cells”, progressively moving fish to a designated site for removal
- Partnership between MNDNR, Wisconsin DNR, USFWS, USGS, NPS, and Wild Rivers Conservancy
- Have removed a total of 37 silver carp

Plans for Continued Monitoring and Response

- 1-2 MUM events / year
- Increased tagging and tracking
- Additional commercial fishing
- Continued monitoring for all life stages
- Testing new technologies
- Encourage and facilitate public reporting
- Update Invasive Carp Action Plan

MNDNR Interaction with Lock and Dam 5 Project

- DNR is grateful for the researchers' efforts in support of invasive carp management
- DNR has provided staff support for ongoing fish passage studies at Lock and Dam 5
- DNR and the study authors have been in regular communication about the project
- DNR has provided feedback including at a stakeholder meeting
- Several questions remain

Pending Questions on Model

- Model estimates an average of 2.8% of invasive carp can currently pass through the pair of dams; improvements should be viewed with this baseline in mind
- Model is for a generic pair of 2 locks and dams, not for Locks and Dams 4 and 5
- Range of possible outcomes with improvements often overlap with or are very near baseline

Pending Questions on Design

- Site has 3 culverts that were identified by 2019 UMD study as passable by invasive carp
  - Not currently addressed, but to be addressed in future design
- Preliminary data from BAFF in Kentucky shows 57% deterrence during spring and summer
  - 1 year of data
  - Unclear how Kentucky location relates to L&D 5
- How will deterrent impact native fish passage and native mussel communities?

Pending Questions on Funding

- Current estimate is 10% design
  - Addressing culverts or other additions such as flushing systems to clear barges will raise cost
  - Does not include operations and maintenance
- Current estimate does not include removal portion of solution
- Unclear who is responsible for funding

Conclusions

- Minnesota DNR is committed to invasive carp prevention and management.
- We are supportive of finding new solutions to manage invasive carp, and are grateful for our robust partnerships with everyone here today.
- We will continue to review the Lock and Dam 5 option in pursuit of the best solution for Minnesota.

DEPARTMENT OF NATURAL RESOURCES

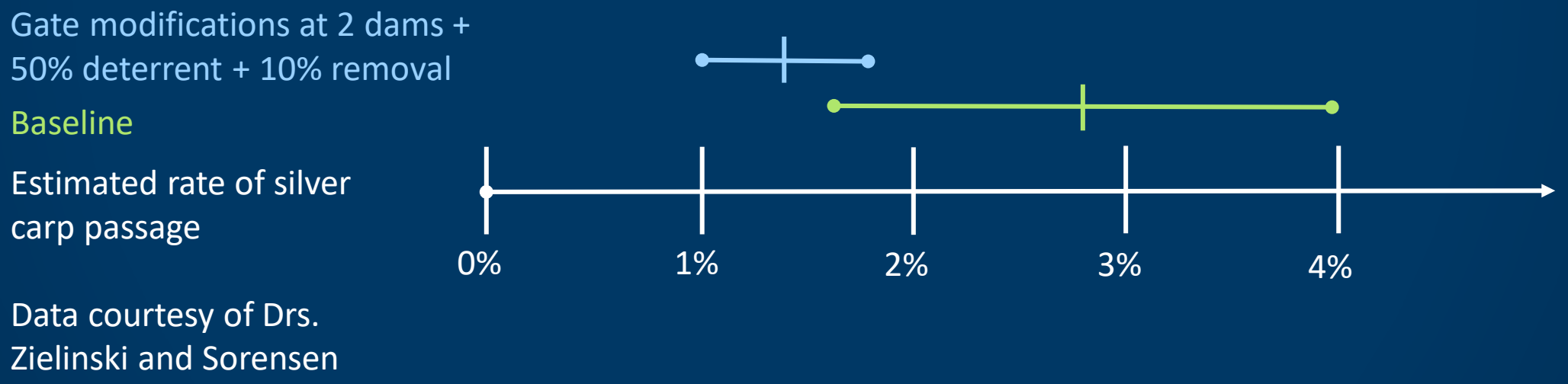
Thank You!

For more information please visit our website:

mndnr.gov/invasivecarp

Additional Information: Pending Questions on Model

- One example of overlap is shown below
- Ranges show 95% confidence intervals for invasive carp passage (assuming model is accurate, we are 95% confident the real value lies in this range)



Data courtesy of Drs. Zielinski and Sorensen