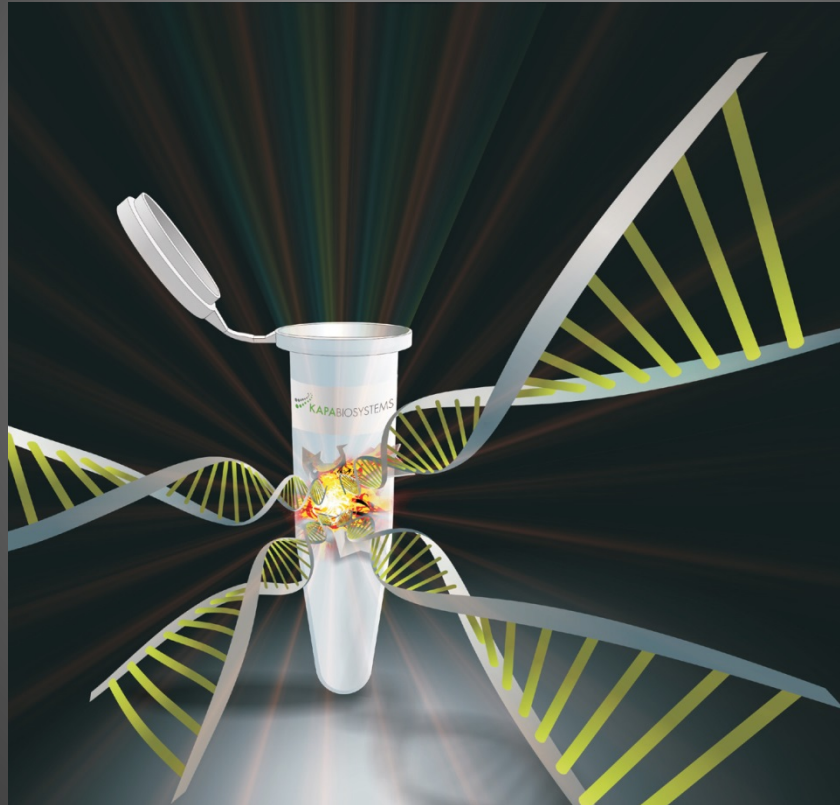


# Environmental DNA (eDNA) and Coordination



[http://replicationdna.blogspot.com/2011\\_03\\_04\\_archive.html](http://replicationdna.blogspot.com/2011_03_04_archive.html)

Jeffrey Herod  
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Mayan cichlid



Bullseye snakehead



African  
Jewelfish



# OUR DISCUSSION TODAY

- *Presentations on eDNA and aquatic invasive species*
- *Discussion and Actions*



Lionfish





# PRESENTATIONS

- *Jeff –Introduce the points for discussion*
- *Dr. Greg Moyer- Introduction on eDNA and results on his work*
- *Jeff –Lead the discussion over the material presented and action items*



Pterygoplichthys

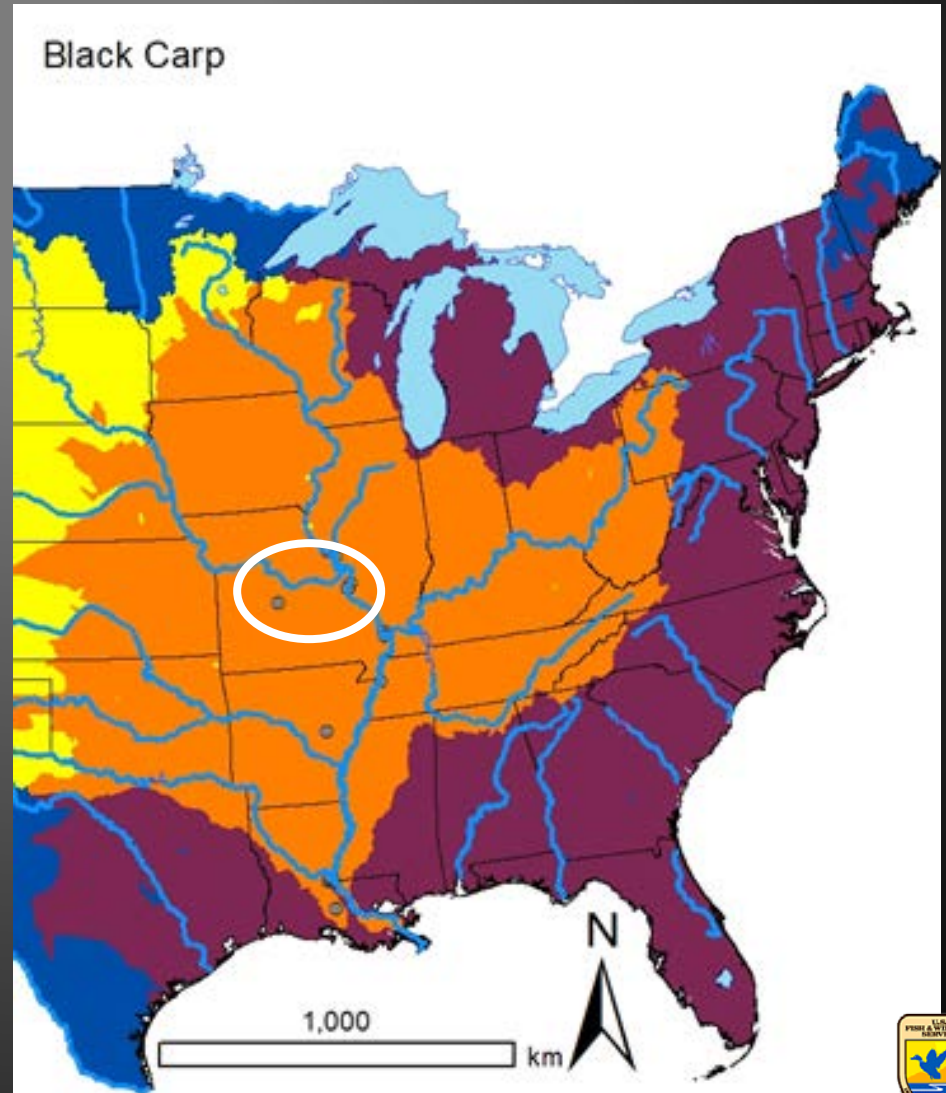
# DISCUSSION AND ACTION

- *ACTION ITEM: GSARP members are asked to consider including eDNA in the EDRR plan.*
- *ACTION ITEM: GSARP members are asked to consider developing a Community Of Practice (COP) for eDNA. This COP would be a committee of GSARP.*
- *ACTION ITEM: GSARP members are asked to consider having an eDNA session at a GSARP meeting. The purpose of this session will be to provide the current understanding of the technology, as well as capacity, and need among GSARP members*



# EARLY DETECTION AND RAPID RESPONSE

- *eDNA is a surveillance tool (ED)*
- *Sensitive habitats*
- *Low abundance*
- *Use to prioritize sites*
- *Couple with traditional sampling*
- *Projects using eDNA (e.g., Asian Carps )*



# USFWS REGION 4 EDNA STRATEGY: 6 ELEMENTS

- **Creation of a (COP) with our partners.** *A Key development is a user-defined group structured around a shared focus of eDNA and AIS. This group is the Community Of Practice (COP).*
- **Establishment of critical infrastructure.** *The infrastructure necessary to implement an eDNA monitoring program in an efficient and effective manner is currently lacking.*
- **Biosecurity.** *The development and use of station Hazard Analysis and Critical Control Point (HACCP) must be a consideration when discussing which facilities are capable of investing and participating in the development of eDNA techniques. The transfer of aquatic organisms across drainage basins must be strictly controlled so as not to further facilitate the movement of AIS across the Region, or the country.*





## USFWS Region 4 eDNA Strategy: 6 Elements

- **Implementation of standard operating procedures for eDNA studies.** *There is increasing demand placed on the Service for the development and implementation of eDNA technologies for detection and monitoring of AIS in Region 4 waters. Region 4 will develop standardized methodology for implementing eDNA technologies for AIS monitoring in Region 4 via our partners (via the COP).*
- **Cross-validation of all procedures and results.** *All eDNA methods for AIS detection and monitoring will be subject to cross validation by at least one other genetics facility. Specifically, all molecular techniques (tissue filtration, DNA extraction, qPCR) for each AIS will be performed by a separate laboratory.*
- **Provide necessary training for our partners and potential volunteers.** *The collection of eDNA samples is less time consuming and less expensive than standard monitoring techniques, but still requires trained individuals to collect water samples. We are proposing a proof-of-concept project to train citizen scientists to conduct field sampling in an effort to establish an AIS monitoring infrastructure for the Southeast that is cost and time efficient. This project is an essential step in developing a regional early detection rapid response system for AIS.*



# DR. MOYER'S PRESENTATIONS



## QUESTIONS FOR THE DISCUSSION

- *Is there a better or simpler way to coordinate this effort than through GSARP?*
  - *Simpler: include as a separate component in the EDRR plan*
  - *Better: Establish the COP and let them develop a process and special session*
- *What should be the role of GSARP (if any)?*
  - *Do we need to focus and develop a business plan for eDNA?*
  - *COP?*
  - *Sampling and pilot study?*
- *What role would GSARP members (individually) like to have in this Strategy?*
  - *COP?*
  - *Infrastructure*
  - *Sampling and pilot study?*
- *What about choosing species?*
- *What about costs (e.g., interest in paying for analysis, but not in developing their own lab to participate in cross validation)*



# DISCUSSION AND ACTIONS

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