MRBP Coordination Meeting Notes, March 3-5, 2020, Cedar Creek, TX 78612

March 3 Morning-MRBP Member Meeting

I. TX welcome and program description - currently doesn't have statutory authority for WID. So they have been conducting outreach for ANS prevention. Estimate it would take an annual budget of $40 million to tackle all ANS issues in Texas. They have a fresh water fish fund for 6 million a year. 10 dedicated FTEs for ANS in TX. They may look in the future at building watercraft wash stations for WID. Those funds had previously been used to build hatcheries. Maintaining Legislative Support is major effort: reports, visits, magazine articles, media releases. ANS is top 5 issues facing TPWD.
   a. MN has given legal authority to private or partner agencies to do WID and other states use concessionaires since have limited funds and limited staff for WID
   b. Asian Swamp Eel - Missouri City Lake. One specimen found/remove in 2016. 41 specimens found in July-October 2019. Sizes 144-762mm. "Electro-gigging" (Electrofish then gig) more effective than netting. Found in local Asian markets, also possible ceremonial release

Mike Hoff - Water Hyacinth available on amazon for all but about 12 states

II. **USGS NAS database updates and improvements** (Matt Nielson)-88 new findings in MRBP states this year (12 new to state, 51 new to drainage, 23 new to county, 1 bonus – 29 plants, 23 mollusk, 21 fish, 7 crustacean). Have a link for ANSTF regions-for each basin team and can add layers to it. Actionable maps and tools to help state plan risk factors. There is an alert risk mapper tool which can provide a short term risk assessment of potential movement (6 month) includes mobility and drainage barriers for ANS spread. It now includes life history data considerations
   a. The system considers flood and hurricanes to determine how flood heights have spread species
   b. Also looking into including aquatic diseases.
   c. Midwest spring flood map-can search by species-flood and storm tracker-looking at when stream gages go over flood stage
   d. Impact tables-working on this trying to collate info on ecological, economic and human health impacts. Survey literature of observational or research outcomes to show impacts to include-can create a summary of literature and info to put on fact sheets-could give them a list of 50-100 species we are concerned about and they could provide that info on those species
   e. Screen and evaluate invasive and non-native data-SEINeD-user sends spreadsheet of data, state and county or lat long, scienctific name and they will find corrections in the data and can let us know any data we would like to provide them with to add to the NAS database. **Goes live May 4th**-no one sees your data it is all analyzed by a computer. Gives you back 2 spreadsheets-one with all species and 2 the only non-native species and you can send it back to USGS for them to put in their system
   f. eNAS (Matt Neilson)-integration of eDNA detection data into the NAS database-presenting results as a management tool. Concerns about how to publicize results and explain to people that a positive eDNA hit doesn't mean the physical presence of an organism. USGS will be hosting webinars and working with providers to ensure only include data that is verified and not publically visible until communicated with the appropriate state and federal agencies.

III. **Report from Life Release Project** (Tim Campbell)-often later in life Buddists are more likely be part of release events. There is also a spur of a moment release - if someone gets sick you release fish to create good karma. Currently having issues not finding contacts outside of WI to interview. Put together an IRB electronic survey which will be going out to all panels to get their feedback on what they could allowed for live release. Such as sport fish release instead of releasing fish from an Asian market. They interviewed 11 people out of 440 contacts. Most common response was that they don't do live release. ½ of all contacts never responded. They will be creating a publication on this. Summary - Life Release is occurring, there are lower risk way to continue practice, and practitioners welcome engagement.
   a. Found this is not likely a release method for silver or bighead carp - feeder crickets or earthworms were common as were bait fish for live releases. They would get an animal you can buy lots of for cheap. But did say that public events where release birds or fish that are flashy when released would be attractive to them.
   b. Wildlife rehab programs were of interest - to be part of releasing animals or pet rehoming programs in lieu of live release.
   c. Oyster reef restoration could be an option - New Jersey Sea Grant suggestions. Increased

survival of a stocked fish was possibly something of interest also

d. There is a pretty common magazine among Buddhists and we could put info in it about what not to do for live releases-give them options.

IV. **Informational Updates**

a. **MICRA/MRBP** (Greg Conover) MICRA is working with sub basins to create Asian Carp frameworks and identify priority projects and making recommendations to the USFWS for annual funding. Fisheries commission wants to be like the Great Lakes fisheries commission like the lamprey program-we are worried about Asian Carp and the commission would provide inter-jurisdictional and research support. MICRA is working on that draft strategic plan and met with delegates at September AFS meeting to talk through the plan to move it to the state directors to sign onto the joint strategic plan.

- Policy coordination - a contractor was hired to help with that. Last year the appropriations bill included language for the USFWS to work in the micro-basins and saw a DOI increase in Asian carp funds, and increase in state ANS plan funding in FY 2020
- MRBP budget-FY 2019 got $46,000 for panel coordination-for 2019 we were on a 6 month schedule to get us back on track. We have 3 ongoing projects-Buddist live release, 2 new startups-micro chemistry and Ecostar labeling project. FY 20-Jan 1-Dec 31st-haven't received funding yet-haven't got work to apply yet for the panel funds. Based on that funds the executive committee has obligated expenses for 2 MRBP meeting-Dec of 2020 is what they budgeted for. Also for MICRA exec board meetings, MRBP website hosting and shipping and repairs for whack-a-mussel and ANSTF travel. The current balance is $25,000 in FY 20 funding (need to spend this calendar year). MICRA balance is $52,000. So total of $72,000 for projects

b. **ANSTF and Panel Principals** (Eric Fischer)-2020-2025 action plan was presented at their meeting in Nov 2019

c. **AFWA Invasive Species Committee** (Kim Bogenschutz) –She has been the vice chair for the last 10 years. We have no AFWA staff currently. The Committee Chair fluctuates and are the Directors of state programs-right now the Chair is Eric Suffen from FL. Their last meeting was in MN and had 2 USFWS reps talking about the LACEY Act what they need to enforce it so got suggestions on how states can help prevent movement of injurious species. Next meeting is next week in Omaha.

- Early detection rapid response. Creating a steering committee with state and fed staff-congressional committees-funding needed-AFWA person sent an email to fish and water resources chair AFWA is working for reauthorization of FL. Pulled together legislative concept to shop on the hill-wants feedback on it. This is result of a fish chiefs call.
- **ANSTF is doing a strategic plan**-reviewing the ANS national plans which there are 8 of them. Kim was on the committee assessing the plans. These include the Asian carp and green crab plan-the question was are they helpful or should they get achieved. Next steps is these plans should remain relevant but some need major updates. Then find someone to lead those effort to do any needed updates. ANSTF is making final decision on which plans need updates. Kim and others will be giving info at the May meeting what updates are needed for them to decide on. Control committee - do they intend to reach out to the agencies that are involved in implementing the plans? Kim - there is an agency leading each plan. Greg is concerned states and that agency isn't getting input. Some plans do not have any leads, but Asian carp does so it is important to include those people.
  - Kim sent emails to all the panel coordinators to get input on the plans
  - 2020-2025 strategic plan-review of the national management plans was one action in that plan

<u>eDNA for Managers Workshop-March 3 Afternoon</u>

I. We are trying to find minor amounts of eDNA to find a rare species. You need to know the question you are asking before deciding if eDNA is the right tool to answer that question

I. **Cathy Richter USGS: eDNA definitions and resources**:

a. Did a lab study with a known amount of eDNA and found an exponential decay curve-so the ½ life was 8 hours but they never completely lose the eDNA signal.

i. Recently Duane Chapman took 80% of carp out of a lake and 3 weeks after the removal there was a ton of eDNA in the lake because there were sick and dying fish 3 weeks after the fishing effort

ii. After 2months got much lower levels-3-7 weeks according from silver carp will persist-will very system to system. Depends on temp. Adam found in a study of Northern Pike in Alaska eDNA

persisted for 35-70 days.

II. **Applications for eDNA analysis and emerging standards**

a. **Katie Bockrath, USFWS Midwest Fisheries Center, Whitney Genetics Lab: Evolution of the USFWS Asian carp monitoring program**

i. Asian carp regional coordinating committee (ACRCC) started the eDNA sampling protocols in 2009, 2013-now USFWS monitors the Chicago area waterways

1. They have been testing since 2009 and 2013 would get eDNA detections and made the calibrations to improve field sampling and markers
2. eDNA detected 18 days post-mortem and post bird fecal deposit, how do barges spread DNA and found persistence of DNA in slime
3. Still working on calibration most recently looking at field sampling improvements-to determine when to sample and how many samples are required to detect Asian carp species
4. 90% of what sampling is from poop but slime and other epithelial cells will contain eDNA-offices that sample carp often that touch carp with equipment could be collecting the sample from boats that have nets on them
5. **Email:** Katherine_bockrath@fws.gov & fws.gov/Midwest/fisheries
6. eDNA is all about trends over time!!

b. **Adam Sepulveda: Applications of eDNA for zebra mussel**

1. In MT 2016, veligers were found in plankton tow sample-Tiber reservoir did a study to sample eDN in MT and in known populations in WI and MN, in 2017 did eDNA study. Plankton tows only effective for very brief window in summer. eDNA extended the seasonal window for detection.
2. 2020 publication on study of several labs and found 91% repeatability of eDNA results

c. **Peter Sorenson: eDNA as a predictor of common carp densities**

1. Studied known density of common carp in a small MN lake and compared to eDNA results to correlate eDNA with the actual fish numbers.
2. Found that more eDNA was in the water than in the sediments.
3. Need to systematically sample to find carp in large waterbodies in winter and summer.
4. In high density waterbodies you will find eDNA for carp-in summer found lower number in winter because the fish aggregated.
5. eDNA reflected concentrations of common carp in lake.
6. Groups of common carp eDNA can be correctly located in lakes with common carp.
7. DNA is typically found in the water within 50m of adult fish.
8. Discussion - Dennis – I have 5 mins to explain to my boss why we should be using eDNA? Katie – is there an established protocol for ANS sampling? It is expensive, not first sampling. Adam – what we going to do if we receive positives? Duane – everyone that does this the first time gets false positives, easy to do wrong. Sheena – a lot of trouble shooting involved with eDNA, pH, turbidity, UV, animal behavior differences may not allow a prior protocol or primer to work. Chris Merkes – look at what currently doing and what are we not able to cover? eDNA could allow you to quickly broaden search area in similar amount of time. eDNA may be better fit for sampling some waters (can't get a boat on it). Peter – eDNA compliments other techniques. Duane – eDNA is expensive, but so is everything else - eDNA can be cheapest.

III. **Panel discussion questions (Discussion leaders Katie Bockrath**

a. **What are the most useful applications of eDNA for managers?** (relative abundance; spawning activity; effectiveness of management actions; rapid detection; biosecurity support; habitat selection; screening for new invasives; monitoring effects of invasions?)

i. You should not use eDNA if you don't already doing sampling because it is expensive

ii. What would you do if you find a positive eDNA hit-so you know what to do if you have a positive

IV. **Data interpretation**

a. **Chris Merkes, USGS LaCrosse, WI: Limits of detection (LOD) and limits of quantification (LOQ)**

i. Concerted efforts to standardize collection, validation and methods and started limited detection

and limited detection and a paper was recently published on this

ii. Don't see publications because we are detecting low concentrations of eDNA so we can't accurately determine the population based on eDNA because it is below the limits of quantification accepted

iii. First need to figure out the assay concentration in the lab before determining the lab protocols-in the lab it is important to have a basic metric to compare results between assays and labs

b. Cathy Richter: Boring but important technical details (log-normal distributions, units for reporting, concentration vs percent detection)

i. 90% of eDNA are from epithelial cells or shed skin cells (slime)

ii. Shedding rate of eDNA is proportional to biomass

iii. How could we get something that would only indicate a live environmental RNA is less stable so theoretically it has if you detected DNA and RNA in the water that should be more indicative of a live organism. But at lower abundance you are unlikely to find RNA at all

c. Adam Sepulveda: Occupancy modeling shiny app, determining sample sizes, incorporating communication plan and action plan into experimental design

i. There is an occupancy model in R called Shiney app by Adam-can be used to determine how many samples are needed to find eDNA for an organism

ii. Did study in pacific NW for mussels and other species like salmon that they knew were to occur there. Using gauge sampling staff to collect samples. How confident are we that there are true negatives

iii. Provide this to managers to determine error

iv. Can determine how many samples per site and how many PCR reps are needed to better decide what effort and money to spend

v. Foundational paper 2016 by Karen Goldburg with critical considerations-one take home is pilot sampling is very important to ensure you methods work and your sampling design-many different variables in different systems and different species

1. Keep in mind where target species live in waterbodies or areas like launches for positive hits

vi. In the Chicago example for carp they use multiple markers to confirm a positive hit

V. <u>Panel discussion questions (Discussion leaders Adam Sepulveda and Chris Merkes)</u>

a. What is a useful eDNA data format for managers?

i. Matt's maps on NAS-hydrology maps-have a heat map to show % detection of all that eDNA positive detections.

1. Wes-there will have a communication plan to address who is contacted when USGS NAS receives eDNA results before results are made public
    a. Wes-there is going to make a pre-submission form to send with the data so NAS can determine if the eDNA sample was collected and processed up to their standards

<u>March 4 Morning, eDNA Workshop</u>

I. <u>eDNA Experimental design – Chris Merkes</u>

a. Objective dictates sampling strategy: proving a negative is challenging, if not impossible. Not much DNA in environment, hard to detect in reactions - At least 60 samples, maybe 120 samples. Early detection at a new invasion site also can be challenging - repetition may be more useful than intensity. Having samples spaced out over time can increase chance to detect. Comparing population sizes or monitoring changes over time requires less samples. Choosing numbers of sites, samples, and qPCR replicates; positive and negative controls; sampling over space and time; occupancy modeling to guide sample numbers; commercial alternatives for sample analysis.

b. Chris Merkes-recent study done last year found that sampling using a robot sampler and a person sampling every 12 hours found positive eDNA hits at a comparable rate as sampling every 6 hours. If you want to monitor and find a new infestation it is best to not do a ton of sample collection at once but collect samples over time to increase your chances of finding the eDNA in the environment

i. It is important to have a negative site and positive site to ensure you have a reference point for comparison. So you need 3 sites total, positive site, negative site and test sites. **Know objective**

ahead of time.

1. Need to look at site characteristics so it would be ideal to have a lake or river the same size as a comparison

c. Cathy Richter, USGS-sampling over time and space on MO River in MO for Silver Carp-2013 study=found shedding rate of silver carp in the river-before and after fish spawn. 40 fold increase in eDNA after spawn occurred-had a zero during spawning. They don't constantly spawn for 3 days they take-eDNA sampling once a week after the hydrograph rise-and then daily would have been better.

i. Creve Coeur lake Silver carp removal-took out roughly 80% of the carp but then in the spring algae got plentiful and silver carp with high water came from MO river into the lake because they are connected

ii. The fish were scared for a couple of week during the removal effort and some were killed and not taken out so high eDNA in October 2017 were removed-high eDNA in March 2018 and then much lower in April 2018

iii. Food availability is likely important for detection for carp because when they are eating and releasing feces that could increase the amount of eDNA detection

iv. If there is continuous fishing going on then you will be stirring up fish and stirring up eDNA all the time if you want a relative abundance using eDNA-need to stop fishing for a period to get a good eDNA sample

d. John Higley, eqo, info@eqo.life-private company: commercial alternative to sample analysis: what to look for in a commercial lab

i. Real time PCR (QPCR) - it is important to understand the chemistry-a positive eDNA hit doesn't tell you if you have a live or dead organism it is telling you the presence of eDNA

ii. Contract labs will mostly be hired to analyze samples that were collected by a state. Most contract labs do extraction and analysis. Collection, fixation, transport, extraction, analysis are all steps. Fixation – usually ethanol. Transport – on ice, frozen, dry ice, different options

iii. There are commercial kits out there-and they are fine to use to collect eDNA for mussels or Asian carp. Mag beads are cost effective if you are going to sample A LOT: Whatever we are doing now is sufficient you don't need a collection kit

iv. Ask lab how you are dealing with inhibitors and what in lab controls are throughout the process to ensure results are valid. And need to know about validation

v. How are you determining if a find is an outlier-need to do a statistical test

vi. Water chemistry issues-like water chemistry is not supportive of eDNA termination so when things get turned over eDNA will be present-

vii. Quantitative real-time PCR: lab practices-have a positive control, negative control, blank, no template control-so have sample with the right water

viii. This is a not a FDA regulated industry so it is important labs are following good lab practices protocols

ix. Tim-there was recently a USACE eDNA study on Asian carp where they were able to find the length of DNA –usually talking about longer the DNA chain the less it is degraded so if it from feces the DNA should be shorter chains

x. He has a process to ensure we know if the eDNA was from a live individual vs. dead organism

xi. What not to worry about in most cases:

1. spin column vs mag bead vs organice
2. Homogenizer vs sonication vs bead beating

xii. What to check in to:

1. Mitigation of inhibitors – metals, enzymes, other things block reaction (tough mix or flocculation most common)
2. In-lab controls throughout the process - to see inhibition, should be on reports
3. Sample handling
4. Documentation
5. Analysis chemistry – do not use cyber green, has high background noise

6. Validation
7. "in the spirit of GLP" is a good sign
8. Guidelines/best practices for: lab set up, labeling, data storage/archive, qa/qc, sample handling
9. Recommended Controls Run in quadruplicate
10. Ask how determining outliers – should be a protocol and statistical test
11. Internal control – DNA from a known source, known concentration is added

II. Panel Discussion

a. Monica - TX does eDNA in tandem with plankton samples and increase sampling if find a positive eDNA use it as a cautionary flag they don't ever do a press release on a positive eDNA hit

b. At this time we should tell people to go out and find more information if get a hit because there have been false positives, we don't know at this time if the organism is live or dead or from a boat

III. Sample Collection

a. **Sheena Feist:** methods for avoiding and managing PCR inhibitors: high background materials like nontarget NDA, leaves, soils have acids. False negative because inhibition-limits advanced interpretation of results. 2016 critical considerations for the app of eDNA method make sure your lab follows these standards
   i. Using a DNA known sample as a positive test in PCR as a control-we know how it should act and if it doesn't act as expected you know your eDNA analysis is flawed
   ii. Multiple markers and florescence markers should be used
   iii. Can you trust the positive control tests for inhibition

b. **Katie Bockrath:** filtration vs centrifugation of water samples for Asian carp: They take hundreds of samples at each site. Used 3-4 filters per 2 liter sample which dilutes your sample, not ideal for rivers but great for clear streams. Centrifuging retains DNA bound in sediment and free DNA. Spiked water with DNA in lab and centrifuged samples-it is promising but needs work. Used 5, 50 mil viles and centrifuged vs. Nalgene bottle and filter and found Asian carp eDNA in the centrifuged sample but filter didn't in dirty water with low densities of Asian carp
   i. Chris-they found more detections at the low densities sites-if you centrifuge sample you will collect you will be reducing the amount of water you sample which reduces your sensitivity-not always going to be the case in every situation. Filter sampling allows you to sample more water, to increase sensitivity-if you can only analyze a few samples you should get more samples or more water to be collected and use filtering to detect mussels because it is much more sensitive
   ii. Turbidity at the sampling time and eDNA outside of spawning time showed no relationship between turbidity and eDNA content in the MO River-silt didn't impact eDNA
   iii. eDNA dashboard is being rolled out for USFWS to talk about history

c. **Adam: Pilot study on eDNA mussel detection**: Field method comparison test for field sampling techniques-because filtering has been used but turbidity has been an issue. Has been able to collect liters of water and filter them for mussel sampling.
   i. Lack of standardized protocols-still a Hodge podge of methods-unsettled science and wild west everyone is sampling differently
   ii. Questions: What is the best field sampling methods, grab samples you filter, plankton tows with 64 micron filter (filtering thousands of liters of water), do you get the same answer using the same methods
   iii. Study in AZ with sampling of waterbodies with different densities of quagga mussels-2 infested, 2 low densities and 2 no mussels. Paired sampling 3 methods, USGS field crews, BOR and USGS labs
   iv. BOR net tow method with eDNA and microscopy-5 tows per sample, 1000's liters per samples, preserve in ethanol and baking soda, microscopy for veligers on 15 ml 40 mL of

sample

v. Likely getting actual veligers in the high density waterbodies but likely just eDNA In the water at the low density sites-because actually found veligers in BOR samples. Not sure if missing small pieces of DNA and just getting big chunks, these nets do because clogged so by the end of the tow there is a good potential you are early on getting big chunks of eDNA but at end of sampling picking up the smaller pieces of eDNA
vi. Found surface samples were good at detection in 3 waterbodies but very bad in 4th waterbody-points to potential differences in these sampling methods-need to dig in and determine what to tell managers how to sample to find DNA
    1. 2020 sampling-identifying sites now with lower mussel densities-in CA and NH and dirty to clear water
    2. So far only tested in AZ and for quagga mussels, need to test variety of waterbody types and for different types of mussels
    3. How to sample is likely to be determinable by water chemistry/quality dirty vs clear

d. **Chris Merkes: rapid eDNA extraction and analysis-**portable eDNA kits-interest in bait pathway for Asian carp-great lakes commission looked at bait and found depending on where you are bait can mean different things and can have different standards and you can have a lot of other things in the bait. Study in great lakes commercial bait trade-
    i. Portable machine which detects florescence-runs for 20-40 mins-entire process collect sample, process sample and in machine is less than 1 hour
    ii. 200 gallon tank with bighead minnows and a single Asian carp
    iii. Instrument can be programmed a head of time to know what it is looking for so the operator doesn't have to program anything-and it spits out a positive or negative.
    iv. Single carp tanks got 66% of samples-from 1 juvenile carp in the tank. 10 carp tank got 83%
        1. 50% novice detection of single carp, no statistical difference between novice and expert
        2. After 90 mins of the carp being in the tank were detected at 95% confidence after 90 mins
    v. Piloted this with law enforcement in a few states
    vi. Wanted to test bait rearing facilities for eDNA-so did a study in Wisconsin to look at round goby abundance in river and 2 lakes in WI. 4 sites tested upstream, 1 site high abundance, 2 low and used kits to test for gobys
        1. Get results right away but has niche uses-good for a small quantity of water like a bait shop-if you need a result on site could be good use for this-it is something you get a result right away and you do something with that like grab bait before it is sold or help direct where sample
        2. Could survey streams, tribs to great lakes for larval lamprey and in tandem with doing electroshocking-this could be a tool get negative eDNA and do tests while going downstream
        3. Initial instrument is $9,000 and the sampling kits with the drill and hand held pumps and tweezers is roughly $800. Once have that, consumables is about $100/sample
        4. IL looking at using to test live fish haulers
        5. This could be used at ports of entry
        6. Lamp is better for dirty samples for these units if have cleaner samples could get a qPCR instrument
        7. Assay detected bighead or silver-more recent assay they now has will detect all 4 carp species can design assay to be genus or family specific or a taxonomic group

IV. Panel discussion

a. Sample methods and experimental design-get as much surface film as possible-to get a hit according to Duane-surface microlayer up to 3 orders of magnitude if you sample from there. You will get a more stochastic sample. Cathy: Hasn't seen the difference in where in a

transect in a lake found fish eDNA, but found in shallow area more native mussel eDNA in shallow area

b. Benthic organism-difference in where in water you are sampling may make a different in finding DNA in a water

c. Dramatic temp effects on eDNA in common carp-temperature was changing but so was food availability as temp went down and fish are more active

i. Adam-lack of evidence 23 diff streams trout biomass, eDNA copies and detections and looked at temp on rocky mountain 12 C to low 20 C temp didn't have a meaningful covariate

ii. Automotive sampler and used a buoy-soaks up DNA over time over a week-John $15 each to make

1. Marine sponges-looked at DNA collection using live sponges to detect DNA in oceans-Adam recent publication
2. Also looking at mosquitos-looking at DNA in their blood to determine
3. Could test bees to see what they are feeding on

V. Wrap-up & Future research needs

a. Erica-what do we do when we get an eDNA positive hit, or when should I choose to do DNA-here are the questions to ask and here are the answers to those questions determine if you should consider using DNA-including costs and target species and what you might do with

i. Adam-decision support tree has been shared with WRP, walk through the bare bones of what you need what is your question, communication plan and how do you use eDNA results-this group can provide comments on and can use for their own programs

ii. What quality assays are out there and what do we still need and which ones to use-someone can house-there is a repository of that literature in End Note. How do you assess assays in a standard ways and how do you get that out there-right now it is up to each user to evaluate what primer they are going to use

1. USFWS is putting together a best practices document including info on this and that is coming out first draft in May

MRBP Coordination Meeting-March 4, Afternoon

I. **Recovering Americas Wildlife Act (Jen Mock Schaeffer)-**it was passed out of committee-continuing to work with House to get bill to the floor, it has 175 cosponsors, 75/25 match-easements could be in kind match-could use license as non fed match if there is a game and non-game species would benefit can use those as match. Apportionment formula-50 land/50 percent human population-want to provide federal aid listed TE species-so now 50% land and water in the state. 25% population, 25% federally listed fed TE in the state-as people and TE species change over time-whenever there is a US census that would be updated-no TE plants they don't count

a. New table went out to tables last week: TE species recovering, petitioned species and candidate and no more than 15% over the course of 5 years- so if you acquisition of land that could count
b. "Shall" to "may" use funds on outreach and education
    i. Education and recreation is capped
    ii. No cap on the threats so could fund invasive species threats funds
c. Struck nuisance species from law-perception of wolves or bears, so that species with severe impacts TE would counts
d. Includes water quality challenge or diseases you can use those funds to address that for TE species
e. Not sure it will pass this congress due to election year
f. 1.85% comes off the top for wildlife sport fish program admin, 10% for innovation grants

program (Fortenberry idea), available year 1: $1.148 Billion

g. Will be shopping to directors next week and then draft a 1.0 version
h. Could modify state wildlife plan to add –to protect your species you can do invasive species monitoring and control to protect species and

II. Great Lakes and St. Lawrence Seaway Governors and Premiers AIS Task Force (Kevin Irons)

a. Had an Asian carp summit on January 28th
b. Economic development in Great Lakes states and Ontario and Quebec
c. 160+ AIS in Great Lakes
d. Least wanted list – 16 high-risk species
e. 4 species listed under US Lacey Act in 2015
f. Mutual Aid Agreement Signed by all 10 governors
g. Harmonization initiative – AIS regulations across states 2017
h. resolution MOU on regional cooperative enforcement operations
i. Homework for MRBP: what are things we can agree on/need help on? Snakehead? Between Great Lakes and MS River Basin AIS coordinators should be talking to fish Chiefs about this
j. Peter Sorenson - Two way transfer of ANS between MS Basin and Great Lakes

<u>March 5-</u> MRBP Coordination Meeting

I. Committee Reports (Committee Chairs)

a. **Research and Risk Assessment Committee:** Duane within the next month will get together with the eDNA people and try to decide where to go from here. Manager decision tree, what should an assay contain. Look at what Great Lakes has done-what guidance and what have they done with positive eDNA hits
   a. Otolith microchemistry-get info on water chemistry so you can interpret for calcium and other chemicals in otolith to analyze where fish are coming from. Need water sample from state, universities or feds can easily get the samples
   b. Has a Asian carp database with thousands of pubs in pdfs, easy to search it with end note-Duane can send it to you if you send him a flash drive
   c. Develop info on population structure on carps in the Mississippi river basin-it has never been done. We don't know where these fish in KS are spawning-not likely in KS. Have some info we can get from otoliths but feeling we need to look from a genetics stand point-only work has been done in China or by Duane. Next eDNA conversation will talk about what we want to do with that next step. $100,000 eDNA Chris said to get one big dataset before you can even start doing that so need to talk to eDNA folks to find out what is needed. Need dozens of samples from each of the subbasins
   d. Zander in ND has spread from the lake they were in to another lake during high water times and have opportunity to flow into the James river so worry they will make it out. Look at generation of bar codes for eDNA to have it on hand so may want to get bar code sequence for $10,000 from MRBP to create bar code sequence for zander

b. Prevention and Control Committee: fact sheet for summarizing the 80 page bait report was created. Rapid response module. 2015 grass carp report was put out and they were tasked to come out with recommendations on how to implement the first 5 items in the report but since 2016 not much has happened. List of recommendations will be sent out to the group.
   a. How to deal with pathogens in live bait-had some ideas but it got dropped. How do you take water samples to test
   b. Arkansas student dealing with snakeheads-finished thesis and recommending he attends the next MRBP meeting and present-how they move and compared diet with largemouth bass. Seemed pretty similar to each other diets
   c. Planning stages BMP for bait harvest, transport for ANS and pathogens-this is the next step in the live bait pathway report. Need to request money for the next step.
   d. Recommending at MRBP mini symposium with 5 experts dealing with fish diseases person, with Arkansas-bait certification program, fed fish health person, commercial producer and harmonization $3,000 for travel and lodging. Panel discussion at the end

c. **Outreach and Education Committee:** Looking for a new Chair for this committee. Ecostar labeling

will be using risk assessments and climate info to educate pilot project for 10 species. 10 proof of concept labels and fact sheets to then go out to other sources for more funding.

a. Upper Midwest fish and wildlife conference is this year and organisms in trade and MRBP could use panel funding to provide travel support up to $5,000
b. eDNA workshop and what products could come out, check out the WRP materials and then see what we want to create
c. Tim Campbell will be putting together some boiler plate language on eDNA-template article for the public to understand what is eDNA and a tool
d. Create a document with talking points for articles if you are going to put out info on eDNA some statement that a positive hit doesn't mean a live organism was present
e. State, regional and national ANS outreach efforts-there are interest in the different campaigns that are in place and we could assess =could create a BMPs best messaging and recreationalist guidelines. Community based social marketing-information isn't enough you need to empower people to take action-pretty set methods. Could have a expert at the next MRBP meeting, half or full day, could do a join meeting with Great Lakes joint meeting in 2021
f. Send out a table to get info on what each state is doing for outreach-send something to MRBP members and partners to gather that info
g. Would be good to have member have 5 mins to present to the group –could do a webinar instead of at a meeting if needed-could have it right before the MRBP meeting
h. Need a new MRBP logo
i. Media library for members to use-pull it all together so people have flicker accounts and media libraries so they have pics for presentations-so we can have photos and videos for each MRBP state

II. **2020 Work plan:** Admin support for the panel, agenda setting, taking notes, organizing annual meeting. Could get someone's admin person in kind or using some of our panel funds to pay them. Have already asked other panels how they fund their coordinators and it widely ranges.

- **a.** Work Plan discussion –
  - **i.** 3k for speaker travel for mini session on live bait and fish diseases
  - **ii.** 5-10k for Zander eDNA
  - **iii.** potential ask for eDNA followup – know in a month
  - **iv.** 5k for community based commercial marketing in 2021
  - **v.** Potential request for Asian carp genetics
  - **vi.** Current available funds for FY2020 – 25k
    1. 50K MICRA funds available

III. USFWS has 25 million for Asian carp, Duane thinks we should pressure them to put someone to coordinate our panel

a. Greg-MRBP coordinator is being provided as MICRA so it is MICRA's inability to provide someone for coordination-so need to appeal to MICRA for admin support. There is no USFWS commitment to –Greg is the MICRA coordinator
b. MICRA is our host organization so need to discuss with them or the Task Force. MICRA gets the panel grant-state plan funds are completely separate from panel funding
c. Could bring as a recommendation to the Task Force or to the Principles meeting that we need admin support
d. Send letter from MRBP to MICRA and USFWS thanking them for their support
e. MICRA is looking for a coordinator as Greg Through the end of the calendar year they hope to have Greg's coordinator position filled
f. Need to draft scope of work and RFP or at least duties to move forward for an admin person for our panel-$12,000 a year likely
g. Asian carp plan was approved in 2007-each basin has their own framework-need to look at the amount of work it would take to update the plan-no required updates on the management plans-plan is very high level to capture everything and anything we do-actively updated and the frameworks are living documents they can update those plans as needed on a 5-10 year basis. Region 3 provided comments on updating the plan-Kim will recommend to

the task force we don't think the national plan but our frameworks-frameworks aren't – MICRA website has the framework for MRBP there

i. Could add appendices in the future to the plan if needed to add to the plan to include new technologies or strategies
ii. Kim is the control committee rep for ANSTF Task Force and AFWA AIS Rep
iii. We have 4 regional frameworks for carp-need to bring all those actions together for a single evaluation of our efforts
iv. Tracking is lacking or not readily available-guidance for the 2 funded basins-every project must have a direct link to the national plan and the subbasin framework.
v. Coordinator of the national plan to report on what states are actually accomplishing-could make a recommendation we want an implementation report –would be helpful at the task force meeting have updates on the plans at each meeting

IV. ANSTF recommendations:

a. Make recommendation for increased funds for MRBP and other panels to cover admin expenses and have project funds.
b. We don't think the Asian carp plan needs to be updated as the basin frameworks are the living documents

V. Schedule next MRBP meeting : December 1-3, 2020, Columbia, MO and workshop on Asian carp coordination in the subbasins

a. Then meet in tandem with Great Lakes Panel in Spring 2021
    i. Social marketing

VI. **Overview of results from different Asian carp capture gears (Scott Collins and Nathan Lederman):** scott.collins@ttu.edu literature review from Google Scholars and looked at 25 gear were classified as active or passive gears. Rated catch rates and precision across habitats. Avoid using a single gear to assess populations. Gill & trammel nets, DC electrofishing, mini-fykes, seining are suggested. Passive gears catch larger individuals

a. Didn't have data for some gears that are being used-this research is a baseline you can compare other gears to