

**MISSISSIPPI INTERSTATE COOPERATIVE RESOURCE ASSOCIATION
PADDLEFISH/STURGEON COMMITTEE MEETING**

January 20-21, 2010
Holiday Inn Express, Downtown
Nashville, TN

Decisions and Action Items

1. The Paddlefish/Sturgeon (P/S) Committee members agreed that the Commercial Roe Harvest States Ad-Hoc Committee formed several years ago needs to be reconvened. Proposed participants include Bill Posey (AR), Dave Herzog (MO), Doug Henley (KY), Rob Maher (IL), Kirk Hansen (IA), Tom Stefanavage (IN), TBD (TN), Marie Maltese (FWS), Dan Burluson (FWS), Tracy Hill (FWS), and Greg Conover (MICRA). The ad-hoc committee was tasked to look at several issues related to the need for consistent reporting requirements for egg sellers and egg buyers. It was also brought to the P/S Committee's attention that the difference between the total number of eggs harvested and total CITES export permits issued by state indicates that domestic trade of paddlefish caviar may be much larger than the international trade. The ad-hoc committee is tasked with developing a letter outlining problems and proposing solutions that will be forwarded through the P/S Committee to the Executive Board.
2. P/S Committee members identified the following as the highest priorities needs for paddlefish management:
 - a. standardized demographics data from biologists sampling and commercially harvested fish
 - b. age and growth data
 - c. age validation from hatchery recaptures
 - d. inter- and intra-basin movement data
 - e. harvest data
 - f. standardized regulations and penalties
 - g. a shared reporting system for roe harvesters and buyers
3. P/S Committee members agreed that the basin-wide paddlefish database is important for future paddlefish management needs, continued standardization of data throughout and within sub-basins, and information sharing within and between sub-basins.
4. P/S Committee members committed to future management of the database within the sub-basins, with an annual merging of the sub-basin data sets into a single basin-wide database. Members will be responsible for recovering and reading coded-wire tags and entering data into a standardized system. Columbia FWCO provided an updated database on DVD. The DVD contains the template that

members should use to enter data for each of the sub-basins. A single lead/point of contact will be necessary for each sub-basin.

5. Columbia FWCO agreed to provide technical assistance to occasionally modify database fields as necessary (e.g., age at capture, back-calculated length at ages, age validation, and digital images), read problematic recapture tags that states are unable to decipher, and assist with the annual merge of sub-basin data sets into a single basin-wide database.
6. Conover will investigate the possibility of posting the MICRA paddlefish database on the new MICRA web site, and to create the ability for password protected on-line data entry.
7. The P/S Committee will request \$5,000 funding from the MICRA Executive Board for each of the next two years to help offset costs for Columbia FWCO to continue to provide coordination and technical assistance.
8. The P/S Committee will request the MICRA Executive Board to assign the MICRA Coordinator to work with the P/S Committee Chair to look for external funding sources for continued management of the basin-wide paddlefish database and paddlefish management in general.
9. Scholten will be requested to work with members of the P/S Committee to finalize the tagging protocol that was initiated in 2009.
10. If not already included as part of the tagging protocol currently under development, the P/S Committee will develop a recommendation that any hatchery-reared paddlefish and sturgeon released in the basin should be tagged as part of the agency's commitment to evaluate hatchery programs and not to limit another basin state's ability to evaluate natural reproduction and recruitment. The recommendation will be submitted to the Executive Board with a request to forward the recommendation to the MICRA delegates.
11. P/S Committee members agreed that it would be beneficial to share sturgeon data (all species) on a basin-wide level similar to paddlefish data. Members agreed to further explore the potential of expanding the existing paddlefish database to house sturgeon data, or to use the paddlefish database template to create a basin-wide sturgeon database/s. Follow-up discussions with Columbia FWCO are needed.
12. Herzog will query researchers in the sub-basins, other than the Missouri River sub-basin, to determine interest and willingness to submit existing and future sturgeon data to a basin-wide MICRA paddlefish and sturgeon database.
13. Herzog will work with Elkington to compare the paddlefish and sturgeon databases for compatibility, to determine how much effort will be required to modify the

databases to function for paddlefish and sturgeon, and to determine if the data entry template will work for importing sturgeon data.

14. P/S Committee members agreed that the commercial harvest states should work with commercial fishermen, fish markets, and fish houses to collect a representative sample of jawbones from commercially harvested paddlefish to evaluate the population structure of harvested fish. Biologists in the commercial harvest states should attempt to collect a minimum of 10 jawbones/inch group/sex/river (a minimum of 300 fish should be aged for each river evaluated).
15. The P/S Committee will submit a written request to the Executive Board to forward the priority data needs for paddlefish management agreed upon by the P/S Committee to the Fish Chiefs and request that biologists in states with commercial paddlefish harvest sample wild populations and work with fish houses/markets to collect data on commercially harvested paddlefish populations.
16. The P/S Committee Chair should follow-up with David Argent and the USFWS Northeast Center to clarify their request for pressing concerns regarding hatchery reared paddlefish. Members also were interested to know the origin and planned disposition of the hatchery paddlefish housed at the Northeast Center.
17. The P/S Committee will request further guidance on the report requested by Past Chairman O'Bara in his letter dated August 3, 2009.

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Meeting Notes

Welcome / Introductions / Opening Remarks

Greg Conover welcomed the [meeting attendees](#) and introductions were made. Conover announced that the Paddlefish/Sturgeon (P/S) Committee Chair George Scholten was unable to attend the meeting and that Scholten had requested Conover to run the meeting in his absence. A [meeting agenda](#) was provided.

Conover thanked the American Fisheries Society (AFS) for helping to cover cost of the P/S Committee meeting. MICRA agreed to hold the P/S Committee meeting at the Holiday Inn Express in Nashville to assist the AFS to reduce the number of unused hotel rooms the organization was obligated to pay for in association with last fall's Annual AFS meeting.

Report of Chair - 2009 Meeting Minutes / Committee Activities for 2009

Scholten prepared a report of [P/S Committee activities](#) for the MICRA Executive Board meeting, but the report was not presented at the P/S Committee meeting.

Regional Reports/Updates

ORFMT (Doug Henley)

Activities include continue to put jaw tags in fish in Ohio River and continue to check for coded-wire tags (CWTs) on most sampling trips. To date this season, 4,300 pounds of paddlefish eggs and 185 pounds of shovelnose sturgeon eggs have been reported harvested. This year there are 20 buyers from four different states, (fewer than last year); and 81 paddlefish harvesters from 5 different states (there were 100 fishers last year). IN, IL, KY, and WV are tagging fish this year. OH did not tag paddlefish last year because of budget problems and it is uncertain if they will be able to tag in 2010. Also this year, KY has started sending people out with willing commercial fishermen to monitor and collect data from the commercial catch, both harvested and non-harvested fish.

Discussion:

How many staff ride along with a commercial fisherman? Typically one intern goes out, but sometimes two people. Doug will be working on the middle Ohio River (Louisville –

Cincinnati area). Paul Rister is working the lower part of the Ohio River (Paducah area).

What states are the buyers from? KY-13; IN-2; IL-2; TN-3. Last year there was a buyer from Florida, but he did not purchase a license this year.

LMRCC (Bobby Reed)

Louisiana

There were no hurricanes in Louisiana or Mississippi in 2009; this was the first time in several years that there was not a hurricane that affected the lower basin. In 2008, Hurricane Gustav went up the Atchafalaya Basin causing unusually large fish kills. Not all of the data has been processed, but the number of dead paddlefish was very high. District managers reported a total of nine adult paddlefish captured during standardized sampling in 2009, which is a much lower number than usual. Large numbers of dead Asian carp were also found as a result of the hurricane.

Very few paddlefish are tagged with either CWTs or jaw tags since Louisiana's paddlefish propagation program ended in 2006. Approximately 20-30 adults are jaw tagged every year as part of the state's Native Fishes in the Classroom Program. About 30 teachers are enrolled in the program. Many teachers bring students to the hatchery when paddlefish are spawned in the spring. Re-circulating systems are set-up in classrooms and the students are able to take fertilized eggs from the hatchery back to the classroom. The large size of the eggs allows the students to witness cell division taking place. Teachers bring the surviving paddlefish back to the hatchery each spring. The fish are CWTd and released into the Red River. This project has only produced a few dozen fish, at most.

Louisiana implemented its first sport fishery for paddlefish in 2007, since the fishery was closed in 1986. There is a two fish daily limit with a maximum 30" eye-to-fork length; essentially targeting all fish 4-5 years or younger and conserving gravid females. The state does not want older fish with roe or potential contaminants harvested.

Only catfish can be legally harvested by snagging in Louisiana. Regulations have been proposed to allow snagging of bighead and silver carps and the state is promoting the use of these two species. There has been some success in the state with developing equipment capable of cutting the thick bones of Asian carp for use as bait in the crawfish industry.

Texas

Texas has not tagged paddlefish in quite a few years. The state is monitoring its paddlefish populations as part of a recovery program that was implemented during the 1990s.

Mississippi (Garry Lucas)

This is the second year of Mississippi's newly implemented paddlefish roe fishery. Last year there was only one buyer and three harvesters licensed in the state. Only the

Mississippi River bordering Arkansas is open to harvest. Twenty-six fish were harvested last year. Two interior waters were opened in 2009. Over 100 fish were harvested from the Sunflower River.

Oklahoma (Brent Gordon)

Regulations were changed to make Monday and Friday catch and release only days. Resident fishermen have been very supportive, although 70% of fishermen are non-residents. Oklahoma is conducting mark and recapture work to assess the paddlefish population in Grand Lake. Paddlefish were introduced into Lake Oologah and work is on-going to evaluate that population.

UMRCC (Mike Steuck)

Minnesota and Wisconsin have not been sampling paddlefish populations.

Iowa

Iowa continues to sample, but has been switching from snagging to using 5" gill nets in order that their data is more comparable with other states. Paddlefish are tagged with jaw tags.

Iowa changed sport fishing regulations for paddlefish to a 33" maximum eye-to-fork length to eliminate the capture of egg fish. Season dates have also been adjusted to avoid capture of egg fish. There is no commercial paddlefish harvest in Iowa.

Iowa continues shovelnose sturgeon monitoring in Pool 13. A few years ago Iowa changed commercial shovelnose regulations to a 27" minimum eye-to-fork length to protect more egg fish. Illinois has a 24" – 32" slot limit. Three years ago Iowa prohibited possession of sturgeon <27" to prevent harvest in their waters. Illinois added roe licensing at the same time. Iowa has detected two new year classes in sampling since the new regulations were implemented. They did not see much recruitment prior to that. Last year 10% of catch in 2-inch trammel nets was Age-0 and Age-1 sturgeon; this mesh size typically does not catch fish that small.

Iowa has been monitoring sturgeon populations in interior rivers, including the Cedar River, looking at spawning periodicity using mark-recapture. Last spring, they collected lake sturgeon which were not previously recorded in the river.

Iowa instituted a roe harvesters and buyers permit.

Missouri (Dave Herzog)

Regulations for paddlefish have not changed, the state still has a 24" minimum length limit. The Missouri River remains closed to commercial paddlefish harvest. Paddlefish snagging season remains unaltered: March 15 – April 30.

Missouri's focus over the last few years has been on sturgeon, particularly pallid sturgeon. Missouri has tried to obtain baseline data and is trying to implement a state-wide mortality study. Biologists are collecting fin rays from sturgeon in the Missouri and

Mississippi rivers to evaluate effects of the potential Similarity of Appearance listing on sturgeon mortality.

While sampling in the upper Mississippi River, Missouri documented pallid sturgeon below the Winfield Dam (Pool 26). Telemetry data over the last few years have suggested that tagged pallid sturgeon may have been as high up the river as Pool 22. A black egged female lake sturgeon was captured and acoustic tagged in the upper river.

Missouri has a 34" minimum length limit for paddlefish in interior reservoirs. Paddlefish were not stocked in 2009, but will be stocked again in 2010.

MRNRC

South Dakota (Jason Sorensen)

South Dakota is evaluating its paddlefish stocking program. The only stockings that have been occurring have been in Lake Francis Case. The state has a project with South Dakota State University to evaluate the population and stocking success. Data already suggests the fish are getting entrained through the dam and are moving down river. There is no natural reproduction in the reservoir. Fish were stocked in the open Missouri River below Gavin's Point Dam for the first time this year.

Nebraska (Gerald Mestl)

Nebraska has a PhD student collecting basic population characteristics on the paddlefish population in Lewis and Clark Lake. One result has been a recent publication that looks at the effects of mainstem water management through the dams and the effects of the Niobrara River on reproduction. In that reach of river reproductive success in the reservoir is related to good natural hydrographs in the Niobrara River.

Biologists are increasing efforts to evaluate the paddlefish population in Lewis and Clark Lake. Recruitment success is still poorly understood. Nebraska has started using a DIDSON camera to estimate population abundance. Nebraska and Iowa are also working on assessment of paddlefish populations in the channelized river below Gavin's Point Dam.

There is a lot of sturgeon work occurring on the Missouri River. Related to the Biological Opinion on the Missouri River there are several programs that have been implemented to evaluate long-term survival of pallid sturgeon. Programs include a standardized population assessment and a shallow water habitat assessment. Habitat creation has been on-going for 5 years and so far it doesn't appear that the work is providing a lot of benefit. That program will be re-evaluated this year. A large secondary channel study was completed and a report provided to the USACE. The secondary channel projects appear to have been very successful in creating habitat diversity in the system. There is another large study that is evaluating the effects of flow modifications out of Gavin's Point Dam. Adult gravid pallid sturgeon are intensively tracked during the spawning migration. Attempting to describe habitat where the fish are spawning. So far the fish appear to demonstrate some very predictable behaviors.

Fish don't appear to be spawning habitat limited, but rather the fish aren't finding each other. The study has seen the same pattern over several years. Males exhibit a couple of different patterns. Found the first reproductive aggregation this year. A gravid female was joined by 3 males that had been tagged one each over the last 3 years. There are a total of about 80 tagged fish. This is an intensive and expensive project.

There is also a broodstock program. There is a limited two-week window based on water temperature when crews can target broodstock for the hatcheries. This is a very coordinated effort. USGS evaluates the reproductive readiness of the fish. Dr. Ed Heist and FWS Lamar Office put together a genetics mating plan. Fifteen or sixteen individual fish were spawned last year. There were some unusual problems with die-offs in the hatchery last year. Many raceways at Blind Pony Fish Hatchery were infected by a frog virus that caused almost complete mortality at the hatchery. Not sure of source or cause of the virus. Seven broodstock that were not ready last spring were held over to see if they would be ready to spawn this spring. This has not been attempted before and would provide some stability to the broodstock program.

They are not documenting a lot of recruitment yet. They are not collecting pallid sturgeon under 450 mm, but they do collect smaller shovelnose sturgeon so they believe they would be collecting the pallid sturgeon if they were out there. The stocking program may provide a sufficient number of reproductive adults over the next few years that would result in documented recruitment.

Other State Reports/Updates

No additional reports.

Update in KDFWR paddlefish harvest surveys on Kentucky Lake, Barkley Lake, and the Ohio River ([presentation](#))

Paul Rister provided an overview of paddlefish harvest data in Western Kentucky. Kentucky has recently implemented more rigid reporting requirements for commercial fishermen and instituted a buyers report. Kentucky recently implemented a number of regulation changes (e.g., creel, size limits, season dates). The state is trying to manage paddlefish stocks on a basin-wide approach than on a state approach. Kentucky conducted the study in an effort to evaluate their management efforts.

Discussion:

What are you doing with the egg samples? The egg samples are being frozen so that fecundity estimate can be done later.

Have you considered conducting any contaminant analysis on the eggs? Yes we've considered it. Kentucky looked at contaminant analysis of meat and eggs from paddlefish in the Ohio River last year.

Have you ever looked at the processed side or only at the raw side? No, only raw.

Does the Commission seem favorable to more restrictive regulations or will they wait to see what data are collected? The Commission will consider both the data and the commercial fishermen's point of view.

How long does it take in years for a female paddlefish to grow from 36" to 38"? Age and growth data shows 7 years to reach 32", maybe 3 or 4 more years to reach 38". If sexually mature it could take a long time because energy is diverted to egg production, rather than growth; if the fish is sexually immature it won't take as long.

Is there much of a difference in the amount of eggs that are harvested from river fish and lake fish? Yes, there are fewer eggs in river fish. The fecundity portion of this study will help us to quantify this difference.

At what length are the majority of the females mature in the Ohio River? We start seeing eggs at about 32", some as low as 30". This is why we feel a 36" minimum length limit is necessary.

Do you have any regulations regarding whether the fish are to be measured by tape or by board? No. Kentucky evaluated this last year and found that our measurements were only about 1" different.

How often are the oxbows inundated? Some will flood 2 or 3 times a year, but some only flood every other year.

Have you seen any differences in paddlefish condition between these oxbows? There are fewer emaciated fish in the lakes that flood more often, but the paddlefish are in pretty poor condition in the lakes that only flood once every couple of years and have Asian carp in them.

Cartersville FWCO did some work in oxbows that didn't have paddlefish in them. There was one lake with Asian carp in it that didn't flood for several years and all the fish in it were emaciated; even 3-year old silver carp were stunted.

Update on MT-ND-OK paddlefish stock assessment activities and preliminary regional comparisons

Dennis Scarnecchia presented an update on his work with OKDFW paddlefish and a comparative assessment of the Yellowstone/Lake Sakakawea paddlefish stock with the Grand Lake stock in northeastern Oklahoma. These are the 3 stocks around which the non-profit caviar programs have been developed in the states of Montana, North Dakota, and Oklahoma. There is a common underlying conceptual approach to the management and much of the data collection in these areas has been standardized, which assists in making comparisons between the stocks in these two regions.

Discussion:

Your table with the five life history stages will apply to all paddlefish stocks. Biologists just need to assess their stocks and plug in the appropriate year classes. In Louisiana males mature between 4-7 years, all are mature by age 7; females mature between 7-10 years, all are mature by age 10. A 30 year old paddlefish was found this year based on a recapture.

The differences in age at maturity are not likely based solely on the fact that there is a commercial fishery. There appear to be life history aspects to these differences.

Is Kansas considering a sport fishery? Kansas has a sport fishery in a few locations. They seem very interested in what Oklahoma is doing. There have been some discussions about a roe sport fishery and we expect that they will share their data with us.

Note: Tom Mosher provided the following information following the meeting. Kansas had sport fisheries on the Neosho River below Chetopa Dam and Burlington City Dam, and on the Marais des Cygnes River below Osawatomie Dam. In 2010 areas open to paddlefish harvest have been added at Iola Dam on the Neosho River and the lower Marais Des Cygnes River adjacent to the MO border. In 2009, our Fish/Wildlife Division director asked if we could implement a roe collection operation on the Neosho River at Chetopa similar to the OK operation. A review of that fishery indicated that harvest is too sporadic to justify start-up costs, and that potential yield could not support annual overhead. In addition, limited manpower and law enforcement issues would make such a project difficult at this time.

Do you think the paddlefish are more adapted to higher latitudes and colder climates? Energetically it appears that the fish are under a certain amount of strain at the southern end of their range. Below Ft. Peck the fish utilize very little energy throughout the winter months. Most effective feeding may occur primarily during just a couple of months when fat is stored up and used the remainder of the year. In the south, even if the feeding is good over a longer period of time, there are likely more energetic demands throughout the year. That would speed up their life history. It may just be an effect of the environments they are in.

Keep in mind that these Montana stocks are completely isolated. It is hard to say how much movement there was throughout the basin prior to dam construction. The fish that now just hang out below the dams would not have done this prior to the building of the dams. The dams have certainly caused life history changes to these isolated stocks.

Fish in the upper Mississippi River are able to move throughout the system, especially during high water in the spring when gates are out of the water. Yet in the 10 years that Iowa has been tagging fish, very few fish have been recaptured in another location and very few fish tagged in other parts of the basin have been recaptured in Iowa. This

suggests that these stocks are somewhat localized even though they have some ability to move past the navigation dams.

CITES Update

Marie Maltese informed the P/S Committee that the FWS reopened the comment period on the proposed Similarity of Appearance listing for shovelnose sturgeon. Comments will be accepted until February 3, 2010. Comments can be provided through the federal e-rule making portal at www.regulations.gov. There will be a public hearing at 6:30 PM January 28, 2010, at Southeast Missouri State University in Cape Girardeau, MO. The public hearing will be preceded by an informational meeting from 4:30 PM – 6:00 PM. Formal public testimony and written comments will be accepted during the hearing. Maltese provided a summary of the exports and export permits processed by the FWS Divisions of Scientific Authority and Management Authority (DSA/DMA). The numbers of permits issued for 2009 were provided, but this does not necessarily reflect the actual number of eggs that were exported. Sometimes the permittee exports less than the quantity listed on the permit, sometimes the permits aren't used, and there may have been permits issued late in 2008 that were still valid and used during 2009 to export caviar. Export permits are valid for 6 months. North Star had permits issued, but they sold some of their roe to other exporters so they did not use all of their permits. A number of permits were partially denied during the year. This happens for several reasons. There were several instances where the harvester was double counting, meaning that some commercial fishermen hold licenses for neighboring states and will report their harvest to both states. This provides an opportunity to get undocumented roe into the system. There were instances where the green weight was reported rather than the processed weight.

There were 185 paddlefish permits issued during 2009. There were 11 exporters. One company exported meat and eggs. Harvest from all 7 open states was included in the exports and totaled 21,699 lbs. The permits included 8,400 lbs. from Oklahoma; 3,850 lbs. from Arkansas; 4,200 lbs. from North Dakota; 2,100 lbs. from Indiana; 1,900 lbs. from Kentucky; 913 lbs. from Missouri; 336 lbs. from Tennessee; and 40 lbs. from Illinois. FWS DSA and DMA are not allowing export of paddlefish roe harvested from Kentucky Lake in Tennessee because of the change in regulations last year. However, Kentucky Lake remains open in Kentucky. The meat export was 10,000 pounds: 7,600 lbs. from Indiana and 2,400 lbs. from Kentucky.

There were 23 applications submitted to export shovelnose sturgeon roe; 21 permits were issued. One application was withdrawn, one denied, and another was partially denied. Three exporters exported roe to Japan (2,300 lbs.) and Belgium (995 lbs.). All harvest was from Illinois and Missouri. Twelve permits were issued for just under 3,000 lbs. of eggs from Illinois; 3 permits for 1,100 lbs. of eggs from Missouri. Total poundage was 4,038 lbs. Belgium requested information on shovelnose sturgeon stocks prior to issuing import permits for the U.S. exported roe. The United Kingdom submitted a similar request late last year. Neither country had imported roe of shovelnose sturgeon previous to last year. The take home message is that the importing E.U. countries are

keeping a close eye on U.S. exports. This was believed to be triggered from the paddlefish report that was requested by the E.U. Scientific Review Group (SRG) last year.

There is some discontent and heartburn from the E.U. countries that the U.S. doesn't have quotas on its river basins. They don't understand the approach of states managing stocks separately throughout a single basin. This is part of the reason why the FWS DSA has been discussing basin-wide management programs.

FWS is looking for information regarding the shelf life of caviar. FWS has received applications to export caviar that is more than 2 years old. They have estimates of 2-3 months to 2-3 years for shelf life of the product. In 1999, FWS said that they would not issue permits for caviar older than 12 months. However, this was not finalized and is therefore, not implementable by FWS. This appears to be another method of getting undocumented roe into the system.

Do you have a dollar amount for the exported roe? No, but the price appears to have gone down due to the recession. Before the recession, eggs were selling for close to \$150/pound. Prices may have dropped to as low as \$50-\$75/pound. Retail prices are unknown. In 13 years of reviewing these applications, there were the fewest ever applications in 2009. Usually there is a big rush around the holidays, which did not happen this year. River conditions may have played a part in the reduced number of applications.

Marie next presented a couple thoughts from the FWS DSA office on the shared basin discussion regarding paddlefish and encouraged some discussion from the group. The SRG is very concerned about Tennessee's 2009 paddlefish management plan. FWS is working with Jim Garvey (SIU) to assemble a report on lower Mississippi River paddlefish data to assist in harmonizing regulations among sub-basins. The Kentucky Lake study has been used by many states, but there is a question of how well these data relate to populations in large river systems. Dr. Garvey will be analyzing previous catch data from the states, while also conducting some data collection to fill in knowledge gaps. The study's objective is to provide science based recommendations to manage paddlefish populations in the lower Mississippi River Basin. It is expected to be completed by spring 2011. FWS recognizes that paddlefish are shared stocks and that regulations vary among the commercially harvesting states, even within the same drainage. The FWS would like to develop a long-term plan for making non-detriment findings on a river drainage basis for shared paddlefish stocks rather than by the current state-by-state approach. To do so, state regulation (e.g., harvest seasons, length limits, gear restrictions, license and reporting requirements) need to be uniform and consistent so that the shared stocks can be managed cooperatively by the states. Such a system will also require uniform enforceable regulations. A similar approach has been adopted internationally by CITES parties. The CITES resolution can be viewed at <http://www.cites.org/eng/res/index.shtml>. The resolution number is 'Res. Conf. 12.7 (Rev.CoP14)' and name is "Conservation of and trade in sturgeons and paddlefish." The Resolution describes a process for the establishment of catch and export quotas for

shared stocks among countries. This resolution lays out what CITES wants to see from all of the parties to the treaty. DSA and DMA are trying to come to closer compliance with the Resolution, recognizing that each state is individual. The FWS's hope is to reach a shared management approach between the states for shared stocks.

DSA is also working with the Columbia FWCO to develop a GIS based platform to allow us to examine paddlefish harvest and management at a national and catch basin level. Brian Elkington will be giving a presentation on this tool later during the meeting. This will hopefully be a good management tool for everyone.

Will the product from Dr. Garvey be reviewed by the states before anything comes of the report/recommendations? It was recommended by the group that states have the opportunity to review the report before it is accepted as final.

DSA is interested in applying stock assessment approaches similar to marine stocks to the riverine stocks. It is imperative to have good estimates of recruitment, growth, and mortality to know if stocks are being exploited at sustainable levels. The need for the MICRA paddlefish database to be analyzed to better understand migratory patterns, contribution of hatchery-reared paddlefish to recruitment, and compensating for mortality through other factors was brought up at the most recent AFWA meeting.

Marie requested input on the idea of moving to a shared management approach for paddlefish stocks.

Discussion:

Can you clarify what you mean by science-based recommendations for the lower basin? Is this limited to only those portions of the basin where stocks are managed for commercial fisheries? The study will include the complete lower river.

Would this include exploited stocks that are not in interjurisdictional waters? Yes.

The focus is on all rivers, interjurisdictional or not, that are managed for commercial paddlefish harvest.

How will states that do not plan to manage commercial fisheries be considered? Not sure of all of the particulars at this time.

Can you send the proposal out once it is finalized so that everyone knows specifically what Dr. Garvey will be doing? Marie will ask her supervisor. Note: DSA is currently finalizing the proposal with SIU to allocate the funding. Dr. Garvey will be providing DSA a preliminary and a final report, which will be shared with MICRA. It would be helpful so that states can identify what additional information is needed.

Is it true that importing countries test the processed caviar they receive for contaminants and is CITES privy to that information? CITES is not involved with contaminants and does not have information back from the receiving countries regarding contaminant

testing results. Marie can request that information. Note: she does not have the results at this time.

How old is the caviar that the exporters are trying to export and is this considered surplus? Usually the caviar is from the previous season. Towards the end of the calendar year it can be from the current season. It generally is about a 2-6 month delay.

Is there documentation that shows these eggs are really that old? It has not been verified that exporters are using this to move undocumented eggs. However, if they harvest 300 pounds and receive a permit to export 200 pounds they can come back and request a permit for the remaining 100 pounds. There is currently no way to know if the 100 pounds are the original eggs or if the eggs were sold on the domestic market and the eggs are undocumented eggs entering the system. No documentation is needed to sell eggs on the domestic market.

Any thoughts on the states getting together to discuss similar regulations so that we could start developing these shared basin management plans?

When you see one state wants 32" and another wants 36", how will the FWS handle that? The FWS has no authority to tell the States what their regulations should be; this is a State issue only. However if there are published, peer-reviewed data that indicate 32" is not adequate for a sustainable population, then the FWS will have to make a finding that they are unable to determine that the export is non-detrimental.

Do you see the basin level management plan being stepped down to populations? At this point, the FWS is just looking at the sub-basin management plans. If we don't have enough data we have to say that. That is the precautionary principal under CITES. The FWS is suggesting that basin-wide management is the best approach to export on the international market.

There is confusion regarding the use of lower basin, sub-basin, and catch basin. What exactly are we talking about? We'll need to see how it is written up in Dr. Garvey's proposal. Marie will find out who all is included in the study and will let everyone know. The goal is to get states with shared waters to talk with each other and establish common management approaches.

What will happen if the states do not get together or you are unable to get the information that you are looking for in this report? What does this mean to CITES? We are trying to establish enough information to make science-based non-detriment findings. There is often considerable uncertainty regarding populations and therefore, detriment to populations. FWS is looking for stronger data to back-up non-detriment findings. I can't tell you where this would go if we are unable to complete the research, but if we don't have published, peer-reviewed data to support a non-detriment finding we likely won't be able to make that determination.

Comment: Paddlefish are valuable fish, almost individually so, and a different approach may be warranted when managing these species. Sampling paddlefish is looked at differently than sampling crappie or bass in the upper Missouri River. A lot more information is necessary to adequately understand paddlefish stock status. Recruitment is a fundamental piece of information. We cannot allow more harvest than we have recruitment, which can be highly variable from year to year. Length limits are a practical approach for fishermen, but how effective is this at protecting the population? Paddlefish life history makes these fish very susceptible to overharvest.

North Dakota uses a harvest cap that is predicated on monitoring recruitment and population estimates. To maintain a stable population, you have to know that there are enough fish coming into the population. The more recruitment you have, the more harvest the population can support. This works in the upper Missouri River because it is not a big open system. State biologists are able to collect data from 80-90% of the harvested fish. It is useful to set goals when using length limits such as protecting 50% of mature females to spawn once, or allowing 25% of mature females to spawn at least twice. The caviar programs are helpful as part of an integrated system, but it is necessary to actively manage the fish and fishermen. The caviar programs allow managers to “make fishermen instruments of sound public policy.”

Sub-basin break out groups – identify current needs for paddlefish management (i.e., what information do we need to develop sub-basin management plans?)

The P/S Committee broke into sub-basin groups for an hour to identify what the individual sub-basins need to move forward with paddlefish management.

Group Discussion – prioritize current needs for Mississippi River Basin paddlefish management

The sub-basins each reported back the identified management needs to the full P/S Committee.

Lower Mississippi

- Identify and summarize existing data sets for paddlefish
- Collect harvest data from commercial fish houses/markets
- Basic biological data: length, weight, age, sex, and stage of maturity
- Age validation
- Ride along programs with commercial fishermen: catch/effort data
- Standardization of regulations for states bordering the Mississippi River. For example, minimum (EFL) length limits for the Mississippi River by state:
 - MS (AR border): 32”
 - MS (LA border):37”
 - MO: 24”
 - KY: 32”
 - IL (MO border): 28”
 - AR: 32”

- TN: 34"
- LA closed to commercial take
- These data are needed annually for a number of years to evaluate recruitment

Upper Mississippi

- Basic biological data: length, weight, sex, age
- Recruitment
- Movement from mark/recapture
- Standardization of regulations
- Commercial harvest information from Illinois and Missouri
- Angler harvest information
- Need to understand the role of tributaries – contribution to population
- Entanglement gear by-catch information
- Identify and summarize existing data in grey literature
- Standardization of gears so that data can be compared between states and basins

Lower Missouri

- Primarily recreational fishery data; no commercial harvest in lower Missouri River
- Interjurisdictional movement and movement out of reservoirs
- Entrainment – how the fish are moving through the dams
- Exploitation and harvest rates of the sport fisheries
- Basic biological data: length, weight, age and growth by sex
- Recruitment
- Contaminants
- Reservoir population monitoring – how best to sample or monitor
- Catches in the channelized portion of the river
- Standardization of regulations
- Impact of the proposed shovelnose sturgeon SOA on paddlefish populations

Upper Missouri

- Considerable data collection occurring so much of the basic demographic information is available for at least one stock
- 3 stocks exist in North Dakota, South Dakota, and Montana: above Ft. Peck dam managed by Montana, below Ft. Peck managed by Montana and North Dakota, and below Garrison Dam managed by North Dakota and South Dakota
- Information needs are by stock
- Annual harvest
- Recruitment: 2 year olds or first spawners
- Reasons for recruitment success or failure
 - First year growth
- Population estimates
 - Total population or spawning run only?
- Natural and harvest mortality
- Critical habitat, including limiting factors and threats
- Equitable distribution of sport harvest in a limited fishery

Ohio

- Nothing additional

Update on the Mississippi River Basin Paddlefish Fishery Mapping Project for CITES ([presentation](#))

Brian Elkington provided an overview of a GIS database of paddlefish regulations developed for the FWS Division of Scientific Authority. The objective of the project was to increase understanding of paddlefish fishing pressures, regulations, and monitoring using geospatial analysis. Partners were surveyed for information that was used to develop the database and maps. Maps were created to summarize all recreational and commercial fishing regulations for paddlefish by state during 2009. Potential spawning sites and fishing hotspots were included on the maps. Maps were also developed to display data from the MICRA coded-wire tag database including sampling effort, sampling locations, hatchery releases, and coded-wire tag recaptures.

MICRA paddlefish tag database update ([report](#))

Elkington provided an annual database update and updated copies of the database were provided. Scholten requested FWS Columbia office to update some of the tables in the 2004 paddlefish project report. The 2004 report was updated with an [Appendix](#) of new tables summarizing data through 2009. There are a lot of data for the basin, however, for the most part there are very few data when you try to analyze just a single location within the basin. There are a relatively low number of recaptures for the total number of tagged fish. Two primary pieces of information that can be derived from mark-recapture studies are movement and growth. Only 25 coded-wire tagged paddlefish in the database have moved between sub-basins.

Columbia FWCO is committed to completing all data through 2009. Any outstanding data should be sent to Brian as soon as possible to be included in the final database.

Review - objectives of paddlefish stock assessment project ([presentation](#))

Conover presented an overview of the paddlefish stock assessment project prepared by Scholten. The original purpose for the basin-wide stock assessment was to further understanding of the habitat requirements and population status of paddlefish across the Mississippi River Basin. The original goals identified for the project were to assess paddlefish habitat use, distribution, movements, extent of harvest and exploitation by stock. The results of a survey Scholten provided to the MICRA states regarding their participation in the project and use of the database were summarized. Information needs identified as part of the survey were summarized by state and by sub-basin. A review of the data needs identified by Mobrاند Biometrics in 1998, and the recommendations provided in the 2005 paddlefish project report were provided for comparison to the current identified needs. The P/S Committee was asked to consider where we stand with paddlefish management needs now, compared to where the P/S Committee has been over the last 15 years.

Mobrand Biometrics came and worked with the P/S Committee in 1998, Scott Hale walked the P/S Committee through a SWOT analysis in 2001, and now the P/S Committee is tasked once again with retrospective of the project and paddlefish management. The current funding situation and request from the MICRA Executive Board are cause for the P/S Committee to consider if the database is providing the information necessary to adequately manage paddlefish populations and what is needed for future management.

Discussion:

Are people using the database and is the database providing the information that is needed for agencies to manage paddlefish populations?

Nebraska uses the database quite bit. Nebraska jointly manages its border waters with South Dakota. The database puts all of the paddlefish data in a single source which facilitates management. The database has also been the source of information for population estimates.

The data have provided some good information regarding intra- and inter-basin paddlefish movements. This was a big unknown when the project started; there wasn't even an ability to assess the extent of movements. There is a lot of good information on paddlefish movements; however there was a big difference in detected movements of jaw tagged versus coded-wire tagged paddlefish from the Ohio River Basin.

There has been no real information gained on habitat use or needs of paddlefish as a result of the project. We have a much better understanding of population status than we did 15 years ago. It isn't likely that we know enough, but we do know considerably more. Many of the data needs are on-going needs. The environment in which we are managing continually changes. For example, the southern part of the basin gets hit by hurricanes and the proposed SOA could have an impact on paddlefish populations, particularly in the harvesting states. It's necessary to continue to collect basic biological data on these fishes to be able to monitor the population over time. North Dakota and Montana have at least 10 years of good data collection and much of this same biological information is still needed in the upper Missouri River. These basic data are needed to drive population estimates and recruitment.

Collecting recaptures is a major need to get the most information out of our efforts and the database. The lack of follow-through to collect sufficient numbers of recaps has been a problem for many states and has been one of the biggest weaknesses of the project. Four thousand recaptures is too few when there are millions of tagged fish out in the system.

North Dakota's and Montana's advantage is the existence of a central collection point where biologists can collect data on 80-90% of the harvested fish. It is not cost-effective when the biologists have to go chase the data down. To the extent possible, jaw bones should be collected from every fish that is harvested from the basin. This is a

real challenge for resource managers when the fish are not concentrated in a few locations where data can be collected in a cost-effective way. How do you get fishermen to bring the fish to you?

A tag reward system may be helpful. MICRA used a reward system during the first few years of the project.

Rostrums with coded-wire tags are often submitted without information on the total number of rostrums that had been checked. Many of the sport/commercial harvest recaptures do not provide meaningful data beyond a general location of capture.

Group Discussion – How do objectives of paddlefish stock assessment project compare to our current needs?

The original long-term goals for the paddlefish project were to assess:

- Habitat use
- Distribution
- Movement
- Extent of harvest
- Exploitation by stock

Nearly all of the sub-basins identified distribution, extent of harvest, and exploitation as significant current needs for paddlefish management in 2010.

More than 30% of the tags in the database were stocked by Texas in the Gulf Basin. It is unlikely that many of those fish would ever be recaptured outside of the gulf rivers. The ratio of CWTd marks and recaptures is much higher if these Gulf Basin fish are not included in the analysis. Texas only tagged 10% of the paddlefish they released. Before Veronica Pitman passed away, she was the only person in Texas known to have been sampling for paddlefish to evaluate the hatchery stockings. Louisiana is seeing some natural reproduction in Toledo Bend Reservoir. There have been 60 lbs and heavier gravid females captured in the reservoir; these fish should be spawning. Louisiana stocked 10 year classes into Toledo Bend Reservoir, but there is only enough equipment for 1 field crew to wand rostrums. The other nine districts in Louisiana are not equipped to check rostrums for CWTs.

First time recaptures are occasionally collected from fish that were stocked as many as 15 years earlier. Having jaw bones to go along with those recaptures would help us tremendously to validate ages of paddlefish.

The P/S Committee considers the stock-assessment work over the past 15-years as an on-going need for management of paddlefish populations rather than a project with a specific end-point. There seems to be some differences between the P/S Committee's and the Executive Board's expectations and understanding regarding the paddlefish stock-assessment work. It is important to review progress and objectives periodically. Long-term goals can be addressed within periodic sub-basin reports. The Executive Board does not have a desire to do away with the database, but MICRA does not have

the funding to continue paying for database management. The \$30,000 annual cost is as much as MICRA's average annual dues collected over the last several years. MICRA's annual expenses in 2009, exceeded \$30,000 before any funds were allocated to database management.

Do the sub-basin reports not satisfy the Executive Boards desire for a product and review of the stock assessment objectives? The goal was to compile sub-basin reports in 2005 into a single project report, yet even today not all of the sub-basins reports have been completed.

It seems that the original intent was for this to be a specific project just to get everyone working together and communicating. It was not necessarily intended to be an integrated plan, but eventually out of the project might evolve some commonalities of goals and objectives, coordination on types of fisheries, uniformity in regulations, etc. It seems that the coded-wire tagging project took on a life of its own and was supposed to answer all of these questions by itself. But that is not the case; the coded-wire tag database alone certainly cannot accomplish all of that.

There are two issues here: 1) how do we accomplish all of the needs that we have identified, and 2) what do we do with the paddlefish database and all of the tagged fish that have been released? We need to evaluate the data to determine if the information is of any value in accomplishing the goals and objectives. It will be necessary to review the differences between the data collected from coded-wire tags and jaw tags. If there is a difference in the information, then we must be careful in interpreting the data from the coded-wire tag returns. One of the most valuable pieces of information from these tagged fish is to have known the age of fish for age validation purposes. This is critically important information for managing paddlefish. If all of these tagged fish are out there, one of the best things to do may be to get the length, weight, and ages on those recaptures.

Additional funding is needed to pay for the management necessary for paddlefish and other roe producing species. Is there a foundation that would pay for database management? A tax on the caviar industry would be helpful. You either need a directly funded caviar program (e.g., Montana, North Dakota, and Oklahoma) or an indirectly funded caviar program. The integrated programs with direct funding and active management in Montana, North Dakota, and Oklahoma are working models. It is also a matter of scale. Paddlefish management is effective in Nebraska because they are able to work at a single point (i.e., below Gavin's Point Dam) to collect the bulk of their paddlefish data. A Fish and Wildlife Foundation Grant was used to provide the originally funding to start the project.

Thursday, January 21st

Group Discussion – future of paddlefish stock assessment project

The discussion began with a review of the sub-basins priority needs identified during the previous day's breakout sessions. The P/S Committee identified the following as the highest priority basin-wide needs for current paddlefish management:

- Harvest data / exploitation estimates
- Standardized demographics data (length, weight, age, sex)
- Inter-basin and Intra-basin movement information
- Age validation from hatchery recaptures
- Recruitment estimates
- Standardized regulations and enforceable legal penalties
- Standardized roe harvest and roe buyer reporting requirements

Standardized roe harvest and roe buyer reporting requirements will be vital to understanding the domestic trade market. Revocation of roe harvester permits will be much more effective at deterring non-compliance of reporting requirements or illegal behavior than the penalties that are currently used that do not have a significant financial impact. Many times fishers consider fines as a cost of doing business. They pay the fine and are right back out on the water harvesting paddlefish. There are known cases where fishermen have been busted in other states, and even had their commercial fishing license revoked, but they simply start fishing in a different state. The states would have to implement reciprocity agreements to prevent this from continuing. Another tactic is for a harvester with a revoked license to work as a helper for other fishermen that are licensed harvesters and then work with them to continue to harvest. The states would have to address the helpers also. It would be best to prohibit a fisherman with a revoked commercial fishing license from being in any boat with commercial fishing gear. There are many loop holes that need addressed.

Every state has a roe buyer/dealer license and reporting requirements. There are a handful of intermediate buyers, but many fishermen are now selling eggs to buyers in other states. Roe harvest and roe buyer reports can be cross-referenced with each other and then cross-referenced again with the export permits. The problem is that this does not address the domestic market. Current system can track fishermen to the intermediate buyer. The buyer is required to report who they bought from, and in some states they must also report who they sold roe to. If every state required roe buyers to report the amount of eggs purchased from roe harvesters (or other buyers) and to report the amount of eggs sold to an identified source, this would address the majority of the domestic market. There must not be a roe buyer permit or reporting requirement in Indiana because there are a number of new buyers in Indiana.

From a Law Enforcement perspective, purchasing records from all states need to be cross-referenced to really track the domestic market. Monthly reporting may be adequate for investigation purposes; annual reporting requirement is not adequate. Law enforcement needs to have daily reporting that is not just totaled by month. A daily telephone reporting system could provide a timely daily reporting mechanism. For a

federal records falsification case the record in question needs to have an original signature by the person filing the record, so a telephone system will not help from a Law Enforcement aspect. A certification statement and signature on all harvester and buyer reports would be very beneficial.

Would it be possible to establish a tag number for lots of roe? The biggest problem is that eggs from multiple fish are combined. However, Mississippi tags paddlefish to track roe. Tracking eggs from an individual fish with a tag number from harvest, through processing, and to the point of sale would be very intensive. It is more feasible in Oklahoma, Montana, and North Dakota where the state is processing the fish. But it shouldn't be out of the question to require this of commercial fishermen. In ND, MT, and OK the biologist records the green egg and processed egg weights from individual fish. That data is collected from every fish and tracked with a state fish tag number. Sometimes eggs from different fish are mixed, but the amount of processed eggs can be traced to each batch. Fish tag numbers would have to be matched to an individual fisherman's commercial license.

It seems that detriment is more likely to result from the domestic market than the international export market. For example, it was reported that the total number of paddlefish eggs harvested in Kentucky during 2009 was 25,000 pounds, but only 1,900 pounds were exported. We do not have a good way to track the remaining 23,000 pounds of harvested eggs. Is this a state or federal responsibility to track the domestic market, because these eggs will be moved across state lines? Internet marketing is especially problematic. If commercial fishermen could only sell to a licensed roe buyer in one of the harvest states, and that roe buyer had to report who he bought from and how much, and who he sold to and how much, the eggs could be tracked to that point. Once eggs are sold to another state outside the harvest states, it is unlikely that the state would have any regulations regarding the reporting of caviar purchases or sales.

There is no federal jurisdiction unless a law has been broken. State laws are necessary for tracking purposes. A requirement that fishermen can only sell to licensed buyers in specific states would prevent fishermen from selling to unregulated buyers, but this would not address the need to track the roe once it is sold by a licensed roe buyer. Nobody is tracking the retail and internet outlets in the United States. Who requires and audits recording keeping of these retail outlets? There needs to be a state report in conjunction with the export reports. The bottom line is that the states all need to have the same reporting format for harvesters and buyers. Harvester reporting requirements need to include: raw or green weight, processed weight, or both; how much they harvested; and who they sold to. Roe buyer reporting requirements need to include: amount of eggs purchased; who they bought from; and who they sold to. Those two documents would help a great deal. Exporters must report on the CITES application who they bought eggs from, providing a paper trail back to the commercial fishermen. Knowing who harvested the roe and how many eggs are sold outside of the harvest states will help the FWS to know who to look at and will provide records to indicate how many pounds of legally harvested eggs were purchased. Getting reporting

requirements in each state was a first step in a process, but now we need to refine the reporting requirements.

Does the commercial harvest state ad-hoc committee that addressed this issue 5-years ago still meet and work on this issue? No. How can a non-detriment finding be made if there is no handle on the domestic trade?

The most valuable way to track this would seem to be at the individual fish level. The individual fish are highly valuable, and there are not so many fish harvested that it would be unreasonable for each fisherman to track by individual fish. There is a precedent for tracking individual fish in the recreational salmon fisheries on the west coast. There are probably only a few fishermen that would be asked/required to track and report more than 100 fish. It just requires a new way of thinking about things. Individual fur bearers are tracked.

What would FWS do if the states do not have these basin-wide management plans? The FWS is pushing hard for basin-wide management plans in accordance with other CITES members countries. FWS cannot force the states to accept the basin-wide non-detriment approach. Kentucky, for example, wrote the FWS and said they did not want non-detriment findings made at a State-wide level.

Our agency administrators need to be made aware of 1) the magnitude of the problem with unaccounted caviar in the domestic trade, 2) the potential shift in fishing pressure if the shovelnose sturgeon are listed under the proposed SOA. We need to intensively manage harvest so that we can monitor populations of roe-producing species. There is sufficient justification for a different management approach. There are relatively few fishermen that would potentially be affected by a more intensive approach.

This issue will be referred to the ad-hoc committee. One of their tasks will be to identify the number of eggs harvested and exported each year to get at the extent of the unaccounted caviar in the domestic market. Reed offered to have someone from his agency attend an ad-hoc committee meeting to discuss the state's trip ticket program to explain how the state manages 25,000 – 30,000 commercial fishers. Louisiana lands about 40% of the fish harvested in the lower 48 states. This program took Louisiana nearly 20 years to refine. Each fisherman has an identification card, similar to a credit card, with a unique identification number on it. Fishermen are required to swipe this card every time they make a transaction on landed fish. The state also has a very aggressive auditing program. Ten percent of fishermen and fish markets are audited each year. If the market has an extreme value, it will evolve into something that will work.

The ad-hoc committee members should include:

- Dave Herzog (MO)
- Doug Henley (KY)
- Rob Maher (IL)
- Jeff Quinn (AR)

- Brent Gordon (OK)
- Garry Lucas (MS)
- Tom Stefanavage (IN)
- TBD (TN)
- Kirk Hansen (IA)
- Marie Maltese (FWS)
- Dan Burleson (FWS)
- Bobby Reed (MICRA)
- Greg Conover (MICRA)

Action Item: The ad-hoc committee will generate the numbers, summarize the problem, and develop recommendations to be forwarded through the P/S Committee to the Executive Board. The Executive Board will be requested to send a letter to the MICRA delegates to inform them of the issue and magnitude of the problem. The ad-hoc committee needs to first identify and define what the biologists should be doing to develop the necessary information, before requesting the supervisors and administrators address other issues.

First, this needs to be discussed with Scholten since he is P/S Committee Chair. There are a number of commercial harvest states not in attendance at the meeting that also need to be brought into the discussion. Scholten will need to confirm who is participating on the ad-hoc committee and notify Reed. Reed will notify the Executive Board of the ad-hoc committee's membership and make a request for funding to cover travel or meeting needs for the ad-hoc committee. Is there a time frame for the ad-hoc committee to complete this work? Any changes in Missouri must be finalized in February in order to take effect in July. No, some states will have more changes and more hurdles to overcome than others.

We are talking about a tool to help manage paddlefish stocks and that is what we are all tasked with doing. The information is necessary to manage paddlefish. Additional demographic data is also necessary, whether derived from biologist sampling or from commercial landings. That could be another recommendation from the ad-hoc committee. These data are necessary in addition to tracking caviar. Can there be a funding component recommended as well? Individual tracking numbers should be considered also. Can the ad-hoc committee meet in person? George will need to appoint a Chair for the ad-hoc committee.

To manage paddlefish we need to continue to collect demographic data. If we continue to collect biological data on paddlefish we will need to manage that data in some way. This brings us to the question of the existing paddlefish database. If the database is no longer managed by MICRA, the individual sub-basins will have to maintain the data in a similar format. To develop interjurisdictional management plans, the states have to be able to share their data. The basin-wide database is useful to provide information on the extent of inter-basin movements and whether or not this needs to be accounted for at the sub-basin level. Intra-basin movements remain a high priority.

If the sub-basins were to manage their own databases, would it be possible to keep them standardized and to merge them once a year to maintain a basin-wide database? That is the value of having a single database; it ensures that data throughout the basin are standardized and comparable.

Is the database in a form such that it could be split up and the sub-basin participants could input their own data (e.g., a blank database)? Yes. The copies of the database that Elkington provided to the meeting participants include a template for data entry. The data could be entered at a sub-basin level and merged. Columbia FWCO could provide training if necessary. As long as the formats are unchanged, the sub-basin databases could be merged relatively easily. The states within the sub-basin can share the work load for data entry and tag reading. The Ohio River states maintain a single sub-basin database and not separate databases for each state. It will be important to merge the sub-basin databases at least once each year. Columbia FWCO will continue to stay involved and help at some level as long as Elkington remains on staff. It is important for the states to become self-sufficient. Coded-wire tags will continue to be used for hatchery releases. Tag reading will encompass both recaptures and hatchery release batch codes. Connecting jaw tags and coded-wire tags is not resolved within the database. The data is all there, but it may require a number of steps to track down the information. Elkington can help people learn how to track recaptures in the database.

There would be much more useful data available if there were jawbones to accompany the coded-wire tag recaptures. This will require removing coded-wire tags and jawbones from all recaptured coded-wire tagged fish because there is no way to know whether a recapture was wild-caught or hatchery-reared. If you look at the number of coded-wire tag recaptures over the life of the study, sacrificing future recaps for the age data will not be a detriment to the population. This will provide us with much needed age validation. Once the age validation issue is addressed and states will have established length-at-age keys, it will not be necessary to pull jawbones every year.

Is there a way the database could be built into the MICRA webpage and password protected for data entry? It would be simpler to maintain the most current copy of the complete database on line for people to access, rather than to try and maintain anything that is interactive. It definitely would not be a problem to post the most recent version on the web site. MICRA is developing a new web site. Conover will check on the possibility of creating a secure page to house the database and also on the potential for on-line data entry. The template for data entry should also be available on the website.

If we do not maintain the basin-wide database, is there a risk that states will no longer justify biologists attendance at the P/S Committee meetings? It is important to continue to meet in this forum, but travel is becoming more and more difficult.

Would it be beneficial to set aside part of the annual meeting for sub-basin groups to meet? There are a number of paddlefish and sturgeon issues that are not going to be resolved or go away any time soon. There is tremendous value for this group to meet

for reasons other than to discuss the database itself. Note: many people that attend the P/S Committee meeting do not attend the annual sub-basin group meetings.

There is a need to continue managing a basin-wide database. The preference would be for MICRA to continue to manage the basin-wide database. In the absence of funding, the states will begin to manage standardized databases at the sub-basin level and merge the databases into a single basin-wide database at least once per year. It will be critical for states to keep up with data entry and not fall behind, and for sub-basins not to modify the database in any way so that they can be easily merged. Everyone working within the sub-basins needs to be using the same data entry template. The database should be modified to incorporate age, age validation, length at age data, and digital image identification number/s. The effort datasheet should be modified to include a sampling code for fish markets. Also, a field for sex should be added to the recapture table.

George sent a survey to the MICRA states to get an idea of the extent the database is used. Of the responding states, 56% indicated that they used the database between 2005 and 2009, and 69% plan to use the database between 2010 and 2014. Should the P/S Committee consider requesting the states that use the database increase their annual MICRA dues to cover the \$30,000 cost to manage and maintain the database?

Would it be possible to generate \$5,000 to pay the Columbia FWCO to coordinate the annual sub-basin database merging and to provide technical assistance? Having someone familiar with the database to assist the states and sub-basins each year would be invaluable. Generating a funding stream to offset the cost of producing instructions, assist in merging the sub-basin database, updating the sub-basin template, software updates, answering questions, etc. would be helpful. It may be possible to cover this with as little as \$500 in additional dues from states that use the database. There is a cost to maintaining a basin-wide database, regardless of who maintains it. The sub-basins will need training from Columbia FWCO for database management and tag reading. Some amount of base funding is justifiable to cover coordination and technical assistance from Columbia FWCO. The MICRA Executive Board informed the P/S Committee that MICRA could no longer fund the database at \$30,000.

Is it possible that the Executive Board would consider funding at the \$5,000 level that has been discussed? It is possible, especially if it were presented as a temporary need as the P/S Committee transitions to sub-basin management. At the same time, the P/S Committee could look for alternative forms of funding to support the database over the long-term. No one has sought additional funding since the original funding was secured to start the project. There are grants, funds, etc. to look into, but it is time consuming.

MOTION: Mestl made a motion that the P/S Committee request \$5,000 funding from the MICRA Executive Board for each of the next two years to help offset costs for Columbia FWCO to continue to provide coordination and technical assistance. Reed seconded the motion.

Columbia FWCO will provide coordination and technical assistance of the database in the form of software updates, standardization of templates, adding new data fields, training, merging the sub-basin databases, assistance in reading problematic tags, etc. Each of the sub-basins will identify an entity/s to recover and read coded-wire tags, enter data into the database, and proof entered data. Original data sheets will need to be archived somewhere. States will need a dissecting microscope, light source, and a coded-wire tag jig and pencil to read tags. Reed volunteered to read tags for Louisiana, Texas, and Arkansas.

How many states have a paddlefish management plan that includes targets, goals, and objectives for hatchery production? Reading coded-wire tags seems to be a hatchery or stocking program issue. Reading tags and maintaining the database is part of the cost of evaluating stocking programs. The responsibility should fall in part on states with stocking programs and not solely on MICRA. Hatchery contribution is a variable in paddlefish management, and states should include costs of tag reading and database management as part of their hatchery programs and stocking plans. Hatchery personnel may be able to assist, especially in the fall after production has tapered off. We should go a step further and encourage states to identify this cost in their management plans as a part of evaluating the success of their hatchery programs; it would help to roll in the whole propagation side of paddlefish management.

Are there guidelines regarding the tagging of any stocked paddlefish in the Mississippi River Basin? Stocking paddlefish affects other states' ability to evaluate their paddlefish stocks, recruitment, and hatchery program success. There is no signed agreement that anyone is aware of. From a biological standpoint, hatchery-reared paddlefish should not be stocked without tags in order to distinguish the hatchery-reared fish from wild stocks.

Should the motion include wording that the funding is to assist during the transition to sub-basin management of the database. No, the motion was not intended to suggest that the funding need would go away after two years. As long as we continue to use the database, we will need some level of technical assistance. Let's request funding for a couple of years and then re-evaluate after two years. The P/S Committee's decision to move to a sub-basin management approach can be delivered to the Executive Board separate from this motion.

The motion passed.

MOTION: Mestl made a motion that if not part of the tagging protocol being developed, the P/S Committee will develop a recommendation that any hatchery-reared paddlefish and sturgeon released in the basin should be tagged as part of the agency's commitment to evaluate hatchery programs and not to limit another basin state's ability to evaluate natural reproduction and recruitment. The recommendation will be submitted to the Executive Board with a request to forward the recommendation to the MICRA delegates. Lucas seconded the motion.

Is there any way to enforce a recommendation like this? No, this is intended to elevate the issue to the Fish Chiefs via the Executive Board.

The motion was modified to tie tag reading and database management to the evaluation of hatchery stocking programs. Stocking programs should include the costs of evaluating success and not be limited to production costs only. Hatchery personnel should assist in the recovery and reading of coded-wire tags, and database management.

Was there some wording in the original agreement that could be used to develop the recommendation? Doesn't this go along with the stocking protocol that an ad-hoc committee is already working on? Scholten was chairing the ad-hoc committee, but work on the protocol stopped progressing. Scholten's report to the Executive Board indicates that he intends to complete this project in 2010. The motion was modified to state that if this issue is not addressed in the tagging protocol under development, then the P/S Committee will develop this recommendation.

The motion passed.

MOTION: Mestl made a motion that the P/S Committee requests the MICRA Executive Board to assign the MICRA Coordinator to work with the P/S Committee Chair to look for external funding sources for continued management of the basin-wide paddlefish database and paddlefish management in general. Hansen seconded the motion. The motion passed.

There was some mention earlier that there is a sturgeon database. Would it make sense to combine the sturgeon and paddlefish database into a single database to create some uniformity in data entry? Another benefit is that it may help when seeking external funding for the database, especially if the SOA is used as a justification. We have focused considerably on paddlefish over the last several years, but we may need to focus much more on sturgeon in the foreseeable future.

There have been problems recently identifying where tagged sturgeon were stocked. A national database is extremely important for these interjurisdictional species. It also makes a lot of sense from a funding perspective. Who is paying for the sturgeon database? Missouri is receiving some funding from the COE Missouri River pallid sturgeon assessment program to house all Missouri River sturgeon tags. Mississippi River tags are not included in the database. When a Mississippi River origin tag is collected on the Missouri River, the tag information is provided to the Missouri River database manager, and vice versa when a Missouri River origin tag is collected on the Mississippi River. It would be much more informative if there were a single basin-wide sturgeon database. There has been some resistance to merging the databases.

Is Jim Garvey (SIU) maintaining a sturgeon database? There has been considerable correspondence, but there was no funding available and it never seemed to take off.

The paddlefish data fields would lend themselves directly to sturgeon data. Sturgeon data could be exported to Microsoft Access files that could be imported into the paddlefish database. There is a lot of sturgeon data around the basin that could be collected and added to the database. This would likely open some potential funding opportunities, especially in light of the SOA. To evaluate impacts or success of the SOA, getting basin-wide data compiled and centralized would be very beneficial. There would have to be an understanding about using other people's data. Data ownership has been a contentious issue on the Missouri River. There are specific entities designated to conduct data analysis of Missouri River data. The Missouri River group has formal agreements in place. This could be done for a basin-wide database if necessary. Some of the Missouri River data is in a COE database, but parts of it could possibly be mirrored in the national database. Once data is published, it may be made available to a national database.

This is also an agenda item at the upcoming Middle Basin Pallid Sturgeon Working Group meeting. Several members said that they want to talk about this issue and recognize sturgeon database management as a need. There is a pallid sturgeon database maintained by the FWS office in Bismarck. We may want to limit this additional database to shovelnose sturgeon. There are stocking and tagging programs for lake sturgeon in the basin as well.

We may need some assistance from the Columbia FWCO to modify the database to incorporate the sturgeon data.

Action Item: Herzog will query researchers in the sub-basins, other than the Missouri River sub-basin, to determine interest and willingness to submit existing and future sturgeon data to a basin-wide MICRA paddlefish and sturgeon database. Herzog will also work with Elkington to compare the paddlefish and sturgeon databases for compatibility.

Will the blank data entry template, once modified to include a species field, work for importing sturgeon data?

We have talked considerably about the need to collect data from commercial fish houses, but have we identified anyone that is willing and able to collect the data? Kentucky is making a 1-year effort to hire someone to collect this kind of data. MICRA is not going to dictate what kind of data the states need to collect, but we should collect this kind of data. Some states do not have authority for their biologists to enter fish markets to collect data without the owner's consent.

When the paddlefish project started, the participating states agreed to tag a certain number of wild-caught fish each year. Is it worthwhile to pursue an agreement among the states with commercial fisheries to collect data from fish houses? States with commercial fisheries should be attempting to collect biological data and jaw bones for aging to determine exploitation. How can you assess exploitation if you are not aging fish? Tracking eggs doesn't tell us anything about what the population looks like. It is

necessary to collect the biological data to assess the population. Collecting and aging jaw bones will increase the work load for biologists, but it is necessary to assess exploitation and manage paddlefish stocks.

How many fish would be needed from the fish houses? The standard 10 per inch group, per sex, for each stock or management unit. Should the commercial harvest states ad-hoc committee be asked to include a recommendation/s to address this need?

The length data indicates that these fish essentially stop growing once they are reproductively mature, so is it appropriate to use the 10 fish per inch group approach? We have struggled with this in mortality estimates for sturgeon. We decided to go with a sub-sample because we had 4 or 5 year classes represented in a single inch group. The minimum data set for both sexes combined will be 300 fish. Many models will not let you do anything without at least five fish from each age class.

Part of the request in the letter to the P/S Committee from the Executive Board regarding the paddlefish project, was to identify current management needs. One of the goals of the P/S Committee that should be brought to the Executive Board's attention is the need for continued collection of biological data from wild fish and fish markets, and of the need to collect age and growth data to assess exploitation.

Should we make a motion to request the Executive Board contact the individual states with the data needs identified by the P/S Committee? Two of the data needs would be the needs just described.

Will anyone have a problem getting support from their agency to collect these data? Would it be beneficial to have the MICRA Executive Board or Chairman contact the Fish Chiefs in the commercial harvest states? A number of the commercial harvest states are not represented at the meeting. We also need the fish markets to cooperate with data collection.

Decision: P/S Committee members agreed that the commercial harvest states should work with commercial fishermen, fish markets, and fish houses to collect a sample of jawbones from commercially harvested paddlefish to evaluate the population structure of harvested fish. Biologists in the commercial harvest states should attempt to collect a minimum of 10 jawbones/inch group/sex/river (a minimum 300 fish should be aged for each river evaluated).

Motion: Rister made a motion that the P/S Committee submit a written request to the Executive Board to forward the priority data needs for paddlefish management agreed upon by the P/S Committee to the Fish Chiefs and request that biologists in states with commercial paddlefish harvest sample wild populations and work with fish houses/markets to collect data on commercially harvested paddlefish. Herzog seconded the motion.

The motion passed.

The P/S Committee reviewed the letter sent by the Executive Board requesting a report on the paddlefish project and current needs for paddlefish management.

Group Discussion: Information Request from David Argent.

The group discussed the following information request received from David Argent (California University of Pennsylvania).

“USFWS Northeast Center contacted me today concerning a future shipment of paddlefish they will receive. They were curious to know if there were any pressing concerns/research projects etc....regarding hatchery reared paddlefish.”

Any concerns should be communicated to the FWS Northeast Center as soon as possible. It may be appropriate to send a draft of the paddlefish tagging protocol. The MICRA genetics paper should be sent also.

Members also were interested to know the origin and planned disposition of the hatchery paddlefish at the NE Center.

Are they just requesting research ideas? It's not clear what they are really requesting.

Action Item: The P/S Committee Chair should follow-up with David Argent and the USFWS Northeast Center to clarify their request regarding hatchery-reared paddlefish.

Tennessee's new online mussel and commercial fish harvest/purchase reporting system.

Don Hubbs (TWRA) was not able to attend the meeting.

Use of Plasma Sex Steroids to Determine Sex and Reproductive Condition in Paddlefish ([presentation](#))

Josh Lallaman (University of Missouri) presented an overview of his graduate research project. Dr. Diana Papoulias and Mandy Annis (USGS-CERC) developed the sex steroid protocol. The objective of Lallaman's study was to determine if plasma sex steroids can be used to accurately identify sex and reproductive condition of paddlefish in the lower Osage River.

Discussion:

What are the infrastructural costs to be able to use this tool? USGS-CERC has been using this tool with shovelnose sturgeon so all of the equipment was already available for Lallaman to use for the study. It may be possible to contract with USGS-CERC to process samples; the cost could potentially be as low as a couple of dollars per sample. The RIA analysis doesn't involve complex equipment other than the steroid counter which is necessary to count radioactive isotopes; it is the most complex piece of equipment and costs approximately \$50,000.

What percentage of these fish are hatchery fish that were stocked into Lake of the Ozarks? Reproduction had not been seen in this system the last 3 years. The fish could be hatchery releases from Lake of the Ozarks, or there could have been some natural production in years prior to this study, or the fish could have moved in from another part of the system. There was no system in place to prevent paddlefish from moving down through Bagnell Dam until recently. A block net was implemented this year and very few fish were seen passing through the turbine. In the past two years there was a lot of paddlefish mortality observed from fish attempting to move through the turbine. Some fish do make it through the turbine. There have been a few coded-wire tags recovered that confirm this. There was also a high percentage of fish observed with missing rostrums. There is a good chance that this population has been supplemented a lot by upper river fish. This year there was a lot of reproduction in the Missouri River. Most of the fish that were implanted with transmitters were captured near the mouth of the Osage River. About half the tagged fish moved up the Missouri River rather than up the Osage River. There appears to be a lot of exchange between these two rivers. It is possible that the spawners move up the Missouri River.

Bagnell Dam was completed in the 1930s. Fish can escape over the spillway during high water. Bagnell Dam is also operated for flood control. When the Missouri River is at flood stage, the output at Bagnell Dam is reduced to nearly no flow. This happened during two years of the study. Tagged fish moved down river when flow was reduced. The fish would return when flow resumed. Some gravid females were collected late in the season, but no spent females were ever collected in the Osage River. There were hundreds of hours of effort to sample paddlefish larvae over the 3 years of the study, but no larvae were collected. The weight of evidence suggests that there is not reproduction occurring in the system.

International Sturgeon Symposium Meeting, Wuhan, China ([presentation](#))

Mestl presented a paper on Missouri River sturgeon research at the International Sturgeon Symposium in Wuhan, China, in late 2009. He gave a presentation and discussed highlights from the symposium and his trip to China. He had a number of pictures and information about paddlefish and sturgeon from a tour of China that included stops at the Beijing aquarium, the Yangtze River, a sturgeon aquaculture facility, Three Gorges Dam, and a sturgeon production facility at Three Gorges Dam,

The theme that came out of the symposium was aquaculture and the fact that the Chinese are aggressively pursuing caviar production of multiple species *en masse* at multiple facilities. Their problems with wild populations are similar to ours in the US. Escapees from aquaculture facilities are impacting their rivers and native species. Some river samples in China reveal populations as high as 80% non-native sturgeons. Most sampling of rivers in China appears to be related to research.

The Chinese import some embryos for production. Their production numbers are projected to skyrocket over the next few years. The Chinese production of sturgeon (tons) is projected to surpass all other production in the world by 2013. They have

multiple huge facilities around the country and are poised to be a major player on the international sturgeon market. Production of farmed sturgeon caviar in China during 2009 was 8 tons. Most of the species being farmed are non-native. One of their national goals is a sustainable sturgeon aquaculture industry, so the industry has the support of state sponsorship. The Chinese plan on putting 300 tons of farm-raised caviar on the international market over the next 3 years. How will this effect egg prices in the US and commercial fishing pressure on domestic roe producing species? We heard reports earlier that some commercial fishermen have already stopped fishing for roe because of low egg prices. Russia, US, Italy, and Poland all have plans in place for farm-raised caviar. It is possible that niche markets could develop for wild-caught fish. Wild-caught fish from a certified origin and with a certified process (i.e., North Dakota, Montana, and Oklahoma) may bring a premium price and may cast a negative light on wild-caught production facilities along the banks of the river or out of a garage. There were no projections beyond 2012, so there is no telling how high future production will reach. The Chinese vision is that there will be no more wild caviar in trade.

The presentations regarding the Caspian Sea were focused on recovery and restoration. There is no indication that they are attempting to re-establish fishable populations. Interest in the wild fish presentations was limited to researchers. They are in a mode comparable to endangered species recovery. The focus completely shifted from the previous conference 8 years ago when most presentations and interest were focused on wild stocks. Eighty percent of this conference was aquaculture-related.

The other theme at the conference was: are the fish we are producing for the wild prepared to be stocked? There were a lot of papers on this topic. In contrast to the US, there is a lot of consideration of the question of fitness for survival. They are producing so many fish that they haven't even considered growing fish out to 8-inches for stocking. Their approach is high numbers of small fish that have improved fitness for survival.

Discussion:

Is there any aquaculture production for augmentation or is it only for the food market? There is a small amount of production for augmentation purposes. There is an issue with the huge amount of meat by-product from caviar production. The Chinese are not accustomed to eating sturgeon flesh.

How tightly regulated is the aquaculture industry in China? There have been a lot of escapes from aquaculture facilities to this point, but there seemed to be a recognition that this needs to stop. The early aquaculture efforts were floodplain pond situations, but they are now using large fish factories. This huge complex is river side, but it is behind a big levee. They had several security guards at the facility.

Were there any indications or interest in other roe species being produced? No, they realize they can produce sturgeon caviar in sufficient quantities to meet demand.

Did there seem to be a genuine attempt to recover wild populations? Yes, it is likely that they are approaching it seriously from a genetics stock conservation perspective.

They understand that they will be better off having wild fish in their systems that they can go back to for broodstock genetics.

Do they have fish passage structures designed into their dams? No, there was not much discussion of that. There is a lot of Yangtze River from the Three Gorges Dam to the ocean.

Summary of proposed Arkansas SWG project: “Morphological and Genetic Differences of Shovelnose Sturgeon from Sympatric and Allopatric Waters of the Pallid Sturgeon within the Mississippi River Basin.”

Arkansas was not able to send a representative to the meeting.

Arkansas developed a shovelnose sturgeon State Wildlife Grant project proposal and requested MICRA to provide a \$2,000 match to help fund the project. Scholten sent the proposal out to the P/S Committee for review and consideration. The study is expected to help with the current understanding of Scaphirhynchus genetics in the Mississippi River Basin and has the potential to help resolve some of the uncertainties that surround the issue. The project includes partners from most of the major sub-basins. The information gleaned will help with shovelnose sturgeon management basin-wide. The proposal and funding request were approved by both the P/S Committee and the Executive Board.

Shovelnose Sturgeon Similarity of Appearance Listing Update and Group Discussion

Past MICRA Chairman O’Bara sent a letter to the P/S Committee with the Executive Board decision on the issue, along with the recommendations that came out of the project. The report from that ad-hoc committee was distributed several months ago.

Maltese informed the P/S Committee earlier during the meeting that the FWS has reopened the comment period for the proposed shovelnose sturgeon SOA listing, and that a public hearing and informational meeting will be held Thursday, January 28th, at Southeast Missouri State University in Cape Girardeau, Missouri.

George Jordan has said that his goal is to have a decision one way or the other regarding the SOA by the fall, before the next commercial fishing season is scheduled to open.

Other business, reports/updates

Budget items, action items, and motions were summarized at the beginning of the afternoon session and were not reviewed again.

Conover recommended that future meeting dates be scheduled during a 5-day work week (i.e., no government holidays) to accommodate travel days and a MICRA Executive Board meeting.

The next P/S Committee meeting was scheduled tentatively for January 25-26, 2011.