

**Minutes for the
MICRA PADDLEFISH/STURGEON COMMITTEE MEETING
Sheraton Westport Hotel, St. Louis, MO
January 6 – 8, 2003**

Attendance: 38 participants representing state fish and wildlife agencies, the USFWS, and Universities (attendance list provided).

Agenda

- Overview of 2002 activities
- Completion of the 2003-2008 paddlefish strategic plan
- Tennessee paddlefish issues update
- Project update: paddlefish stock assessment
- CITES and USFWS law enforcement updates
- Uniform reporting of commercial harvest
- Regional paddlefish management plans
- Overview of reservoir ranching issues in Kentucky
- Position statements on reservoir ranching and stock transfer of genetically altered fish
- Tennessee Technological University paddlefish project update
- Technical presentations

Monday, January 6th

Call to Order, Introductions and 2002 Overview

The winter 2003 meeting of the MICRA Paddlefish/sturgeon Committee was called to order by chairman Bobby Reed at 1 PM on January 6, 2003 at the Sheraton Westport Hotel, St. Louis, MO. House keeping included the announcement that MICRA Chair Norm Stucky (MDC) would not be able to attend the meeting due to a skiing accident, and Jerry Rassmussen (MICRA Exec dir.) would be unable to attend because of an urgent USFWS meeting. The first order of business was the "Report of the Committee Chair" on this past years activities of the paddlefish committee. The paddlefish/sturgeon committee met twice over the past year with meetings in November 2001 and March 2002. Activities of the group centered on development and revision of the paddlefish strategic plan, issues dealing with the caviar trade and commercial fisheries, standardized reporting of commercial data, basin wide paddlefish stock assessment study, sub-basin paddlefish reports, and technical presentations.

Over the past year, chairman Reed attended two MICRA Executive Committee meetings one in Des Moines, IA and one in Springfield, MO to deliver the "report of activities" of the paddlefish/sturgeon committee (see attached summaries for details if needed). At these meetings, chairman Reed provided to the MICRA Exec board a written summary of the activities with copies of the complete minutes attached. Reed went into considerable detail for the Exec board with regard to the revision of the strategic plan, change of the paddlefish stock assessment data base to MS Access (from dbase), and the status of uniform standardization of commercial reporting. A proposed paddlefish/sturgeon committee operating budget was delivered to the Exec Board for consideration. The budget proposal included just "maintenance" monies for the ongoing paddlefish stock assessment study (tagging equipment repair, tags, data base software, data sheets, and printing costs), and did not include any "new" items or study. Chairman Reed stressed the importance for operating monies for the stock assessment study since MICRA had been put on the back burner for almost two years.

2003-2008 Paddlefish Strategic Plan

The straw draft of the 2003-2008 strategic plan developed during March 2002 was discussed, and goals, issues, objectives, and strategies were revised. In addition, an outline for a background and situation analysis was developed and objectives were reviewed a second time and prioritized. (Since the meeting, the working draft was edited and will be distributed for additional review.)

Tuesday, January 7th

Strategic planning continued....

Tennessee Paddlefish Issues: Proposed Regulations and Process

Bill Reeves and Rob Todd (Tennessee Wildlife Resources Agency) gave an update on Tennessee Paddlefish Management with a presentation entitled **2003 Commercial Fishing Recommendations Preview** (see <http://www.state.tn.us/twra/fishmeet.html> for proposed commercial regulations. The presentation is the culmination of work on-going in the Mississippi and Tennessee River basins since 1998. Biologists were concerned that paddlefish populations were in trouble, possibly from over harvest, but had no direct evidence. TWRA discussed the issue with commercial fishers and fish management biologists and they all agreed there may be a problem, but needed data to verify their concerns. Biologists and Commercial fishers decided to combine commercial harvest data and biological sampling data to save money and time on this management study. Their management goals were to maintain a sustainable harvest of mature females, reduce annual mortality of males and immature females and maintain total annual mortality at less than 30%. Results of the study generated recommendations that would be presented to the Tennessee Game and Fish Commission for enactment: eggs from harvested paddlefish must be kept in ovaries and onboard while on the water; fish less than 36" eye to fork must be returned to water unharmed; 36" or larger fish may not be possessed alive away from the water where they were harvested (to reduce ranching potential); minimum 8" bar mesh; prohibit commercial take and possession of paddlefish in east TN, reduce season length by eliminating Nov, Dec and April; prohibit cutting or mutilation to check for eggs. Further recommendations included instituting a complete receipt system such that all sales require a receipt and closure of shovelnose sturgeon harvest to protect pallid and lake sturgeon. Recommendations that were passed by the commission included: 34" length limit, 3" minimum bar mesh, closure of Cherokee reservoir, 15 day reduction in season (off beginning of season) and prohibition of cutting or mutilation to check for eggs, the receipt system and a 30" length limit on shovelnose sturgeon. For the future TWRA want uniform regulations throughout the paddlefish range, want to increase license fees or commercial fishermen, employ commercial fishermen to teach law enforcement personnel, continue to monitor paddlefish populations and meet with all interested parties. Tennessee is actively involved in a number of law enforcement cases involving paddlefish, and neither Reeves nor Commercial Fisheries Biologist Rob Todd could explicitly comment due to pending litigation.

Stock Assessment Update

Greg Conover and Jo Grady (USFWS) discussed the **Paddlefish Stock Assessment Project**. Jo handed out MICRA Paddlefish Stock Assessment Database (Jan 2003) to state representatives on compact discs. Jo needs funds for computer resources in the form of learning software for Access 2000. They asked committee if any protocol updates or changes were needed. The Ohio River states are using jaw tags and coded wire tags and have stopped weighing fish because they have developed a robust length-weight relationship. Jo indicated that going to jaw tags and eliminating CWTs would be a major change in the database. Ohio River states said they were not abandoning CWT and would continue to wand fish. Illinois indicated they would continue collecting weight data to monitor any effects Asian carp may be having on paddlefish relative weight and condition. Arkansas wondered if jaw tags increased paddlefish catch-ability. Mr. Chairman said he hasn't noticed any such increase in his work. Arkansas commercial fishermen believe jaw tags would increase catch-ability. The Ohio River biologists are trying

to standardize gear type used in the study. They are mostly sampling in tailwaters. Doug Henley thinks jaw tag retention is 100%, although no study has been done to confirm this.

CITES and USFWS Law Enforcement Updates

Marie Maltese (USFWS/DSA) gave a **CITES Update** and thanked the group for all the assistance they have provided over the years and offered her agencies assistance, as well. They reviewed 49 permits for paddlefish caviar in 2002, which is the highest number of permits they've ever reviewed in one year. Five of the applications were denied, 10 were withdrawn or abandoned. The vast majority (99%) of abandoned permits result from applicant being unable or unwilling to provide all required information. Among the 49 permit applications they received 10 permit applications from Osage Catfish to send live paddlefish to China – 5 were returned: there were 3 applications for research (2 of which were from Steve Mimms), 36 for caviar, one from a Minnesotan which was changed 3 times and finally abandoned. Prior to 1998 all applications were for shipment of live paddlefish. For the period 1992 to 1998 there were 32 permits. Since 1998, 148 permits have been issued (ave 22/yr), 109 of which were for paddlefish caviar. Dealers to which these permits were issued include: Great Atlantic Seafood (largest exporter-18 permits), Hanson Caviar NJ (12 permits), and one each for Slow Food NY, Kinder Caviar KY, Unifood WA (white sturgeon and paddlefish), L&L International among others.

Since 1998, they've received 9 permit applications for shovelnose sturgeon caviar, 1 of which has been issued. Largest application was for 1500 lbs, smallest was for 2 lbs, most were for 200 – 300 lbs; one application was for 18 month old roe (permit not yet issued).

Recently in a review of significant trade, the US recommended that Canada was not properly managing their lake sturgeon stocks and therefore recommended against import or export of any product therein. There are 160 signatories to CITES and each one has power to make such recommendations. CITES can't shut a fishery down but it can recommend against import or export of its product.

On the international front, Marie's office received a letter from the Secretariat imposing a 1 month moratorium on import of beluga caviar. One month later the ban was rescinded. She suspects this has to do with the Caspian Sea sturgeon issue. Several year ago the CITES conferees reached an agreement on Caspian Sea sturgeon stocks, know as the Paris Agreement. The agreement recommended a three stage process to improve stocks: declare size of stocks, survey to determine stock size and monitor populations with standardized methods, and develop an intergovernmental sturgeon management plan by June 20, 2002. Iran is the only country that has complied, so far, otherwise, there appears to be little cooperation with the agreement among other Caspian Sea states to develop the management plan. States have not standardized methods and stock assessment data so far is shaky at best. The CITES standing committee now thinks the Agreement was premature and that the Caspian Sea States couldn't be expected meet all agreements and should have one or 2 more years to work on it. Up till 1998 the Caspian states had made great strides in reducing illegal trade. Since then it's worse than ever. There is almost no law enforcement funding, and law enforcement agents, and their families, are being killed. Illegal trade is 10 to 15 times worse now. When asked why CITES can't step in and cut off import/export like it did with Canada's lakera, Marie said US is being lenient now in hopes of getting the Paris Agreement implemented and the CITES secretariat is opposed to shutting down Caspian sturgeon fishery because this area is so economically depressed and so many people's livelihoods depend on these stocks. CITES hopes eventually the Caspian states will be able to take on management responsibility for their own portions of the Sea. There are people smuggling suitcase after suitcase full of illegal caviar into and out of all these countries, operating much like drug smuggling operations. Illegal trade is probably close to 15 times greater than legal trade. Vince T. said that Caspian Sea stocks had previously been maintained by stocking, but since the breakup of the USSR no stocking has been done. Iran is managing the south Caspian well, however. Since dams on Volga River went in, eliminating sturgeon spawning grounds, stocks have been in trouble. Only one river left on Caspian that has not been damned. There are also severe water quality problems on the Sea.

Recently, CITES was petitioned to list the Beluga. There were public hearing on Dec 11 and some comments were received. Public comment period now closed and over the next few months the comments will be analyzed and recommendations will be made to list or not to list and will be published by July 31. FWS is being closely watched on this. If beluga get listed, Marie believes there will be an increase in petitions to list other sturgeon species. Also if beluga are listed, its feared that paddlefish and sturgeon stocks in US will be hit hard. Marie asked group if we want to see a proposal to CITES for

moving shovelnose to a higher listing because of similarities between species? In two years there will be an opportunity to make such recommendations for consideration at the next CITES Conference of Parties.

Rob Todd said Marie is seeing an increase in number of applications because domestic market dried up after 9/11 because no one is ocean cruising, nor flying, but there's still product and dealers are seeking markets overseas.

FWS is developing uniform reporting requirements and Marie has been charged by her supervisor to process applications as fast as possible and therefore they're discussing how to expedite the process, such as to pre-certify some states for year long permits on certain waters, and will entertain suggestions. The Scientific Authority is responsible for making determination that CITES permit will not be detrimental to the resource.

It appears most of our exports are going to the European Union and Japan. They have received no reports of shovelnose roe coming back to US mislabeled.

Laura Noguchi (USFWS/DMA) informed group that there were two publications on the CITES web site (www.CITES.org) the group may be interested in, an overview of the status of sturgeon around the world and specifics on domestic labeling requirements – look for COP 12 (Conference of Parties), Issues 42.1 and 42.2. Her shop would very much appreciate a 'heads-up' on any regulation changes, water closures, etc, and if there's anything they can do to help us, just call.

Uniform Reporting of Commercial Harvest

Bobby Reed and Rob Todd briefly discussed *Uniform Standardized Reporting of Commercial Paddlefish and Sturgeon Products* with the membership. All agree which data needs to be collected. We need a place on the web site to house the data, with a table showing which data each state collects. This table could be emailed back out for review. Ideally all data from all states would be entered on one standardized form, but each state would not have to complete all fields in the table. **Rob Todd** thinks this process should be postponed until law enforcement has given their input into the process. Final development of the database was not resolved.

Regional Paddlefish Management Plans

Bobby Reed provided direction for completion of sub-basin management plans. The Ohio River Sub-basin completed a plan in 2001, but the sub-committee still needs plans from the Lower Mississippi, Upper Mississippi, and Missouri sub-basins. This efforts need to begin ASAP and will be lead by Bobby Reed (Lower Mississippi), John Pitlo (Upper Mississippi), and Gerald Mestle (Missouri).

Wednesday, January 8th

Overview of Reservoir Ranching Issues in Kentucky

Doug Henley (KYDFWR) handed out a fact sheet entitled Reservoir Ranching Proposal for Kentucky Public Waters and discussed this issue as it relates to KY. Following passage of KY General Assembly House Joint Resolution 210, which states that Kentucky State University with the KY Aquaculture Task Force and the KDFWR shall conduct a series of statewide public meetings, conduct a survey, and generate a final report and recommendations on the feasibility of reservoir ranching on public waters and public support for this activity. Because of decline in tobacco farming in KY, the state is looking for new income sources for farmers. Farmers will grow out paddlefish for stocking in public reservoirs (state and COE). Stocking rate will be 5 fish/acre/year in 2000 acres/yr for 10yrs (20,000 Ac total) after which time the program will be evaluated. Only gynogens will be used and will be protected from harvest for 8 -10 yrs. Commercial fishers will harvest during Dec through Feb with 5-8" gill nets. KYDFWR is not in favor of proposal and the Commission voted not to endorse. Steve Mimms says gynogens are capable of reproducing. The female brood stock are from Cumberland and Ohio Rivers. At which point Chairman Reed queried the comm.: is a position statement needed? Yes. There's a possible genetic diversity

issue herein: shovelnose sturgeon milt that's been irradiated is used to fertilize the paddlefish eggs. Once development begins the eggs are heat shocked. Gynogens result. As gynogenes are highly inbred, genetic swamping could be a concern if enough of these fish get into the system. Ed Heist doesn't think effects would be any different from any other stocking program. Marie has a one page description of gynogens from Steve Mimms, which she will circulate to the committee..

Position Statements: Reservoir Ranching and Stock Transfer

Reed led a discussion of these issues and will submit a final draft for review. The reservoir ranching issue was easily handled, and the sub-committee tailored a statement opposed to such use of public resources for private profit, however, the stock transfer issue led to a discussion of gynogen use and bogged down due to a lack of clarity about potential influences of gynogens on natural populations.

Tennessee Technological University Paddlefish Project Update

Phil Bettoli (TN Tech) discussed their paddlefish project which has just begun on KY Lake. Most of the caviar exported is from TN and 85 – 92% of that comes from KY Lake. There is a concern with the sustainability of the harvest in the Lake. The objectives of the study include description of stock characteristics and estimate population size, assessing likelihood that commercial exploitation is causing growth over-fishing or recruitment over-fishing, mathematically model variation in annual recruitment as a function of hydrologic variation and determine the source of paddlefish stocks in the Lake. They use commercial fishing data to determine number of fish removed from the population in conjunction with the use of change in ratio technique to estimate the population size and assess impact of harvest on the fishery. Growth over-fishing occurs when a large proportion of the population is harvested before reaching full growth potential. Recruitment over-fishing occurs when a population is so heavily fished that it cannot replenish itself. They will utilize population models in the FAST software. They will examine the spawning potential ratio versus the exploitation rate which will compare lifetime egg production potential of an unexploited population with that of an exploited population. If exploitation exceeds 20% it may indicate recruitment overfishing. They will also use catch curves (natural log of catch vs age) to estimate population size.

Technical Presentations

- Systematics of the taxon *Scaphirhynchus*, Bernie Kuhajda, University of Alabama
- Feeding Dynamics of Louisiana Paddlefish, by Nicole Smith and Richard Condrey, Louisiana State University
- Paddlefish Populations on the Arkansas River, Bill Posey, Arkansas Department of Fish and Game (for Jeff Quinn)

Bernie Kuhajda gave a presentation on his work at the University of Alabama. He first addressed the possible hybridization between the endangered *S. albus* and the sympatric *S. platyrhynchus* within the Mississippi River Basin, presumably due to habitat modifications. Several character indices have been developed to assist fisheries biologists in identifying specimens of *S. albus* from *S. platyrhynchus* and hybrids of these two species. Character indices have numerous assumptions, including that pure strains of both parental species are within the sample analyzed and that hybrids are morphologically intermediate relative to their parents. Additionally, all indices are based on data from Bailey and Cross (1954), who measured only 13 specimens almost exclusively from the Missouri River drainage. If these indices have produced inaccurate identifications, then all previous work on status surveys, habitat use or migration studies, captive propagation efforts, or the harvesting of tissues for genetic studies are questionable. These indices were tested by examining progeny of "known" pallid, shovelnose, and hybrid sturgeon propagated, raised, and preserved at hatcheries by the U. S. Fish and Wildlife Service. These 60 specimens (78-600 mm SL) were propagated with brood stock from the upper Missouri River Drainage,

where hybridization between these two species presumably does not occur. Existing indices did not correctly identify small (< 250 mm SL) or combined sizes of *S. albus*, *S. platyrhynchus*, and hybrid sturgeon. Indices worked fairly well in identifying large (> 250 mm SL) *S. platyrhynchus*, but differentiating between large *S. albus* and hybrids was not realized. An alternative approach to character indices is principal components analysis (PCA). No *a priori* knowledge of the identity of the specimen is required with this multivariate technique, which avoids potential circular reasoning present in indices. Complete or almost complete separation between these sturgeon species and their hybrids was realized using a standard PCA on a correlation matrix of 13 meristic characters and a sheared PCA on a covariance matrix on 51 morphometric variables. Additionally, this study demonstrated that first generation hybrids were intermediate with respect to their parental species. Multivariate analyses with a reduced character set of 6 meristic and 12 morphometric variables also lead to accurate and reliable specimen identification. Recording appropriate data from released specimens and making it available is essential for researchers to have any scientific or legal basis for genetic or any other studies involving these sturgeon. Additional data recording via photographs or videotape are also advisable.

There is still a lack of genetic markers to differentiate between these two species and their hybrids. For mitochondrial DNA sequence there are no unique haplotypes between the two species and the genetic differences between northern and southern populations for each species are nearly as large as differences between the two species themselves. All pallid sturgeon from the Atchafalaya share haplotypes with shovelnose sturgeon. Specimens identified as hybrids have haplotypes more similar to pallid sturgeon. Unfortunately, all specimens were released so identifications can not be verified. These same tissues were used in a nuclear DNA microsatellite study where no unique alleles were found within a species, just significant frequency differences. The allele frequency differences were significant between northern and southern populations of pallid sturgeon but not shovelnose. In contrast to the mitochondrial DNA study, microsatellites showed that hybrids are more similar to shovelnose sturgeon.

He also has in his possession 250+ fin clips of sturgeon (various species) from the Old River Control Complex, LA; all specimens were photovouchered. He will be running microsatellites from these tissues in conjunction with Rick Mayden and Rob Wood at St. Louis University. A sub-sample of these sturgeon were preserved for a morphological study that will complement this genetic work.

Nicole Smith and Richard Condrey (LSU) and Bobby Reed (LDWF) introduced their work on *Feeding Dynamics of LA Paddlefish*. The project objective is to determine the diet habits of paddlefish in the Mermentau River. They intend to collect (and sacrifice) 15 fish/month using 5-6" mesh gill nets. They are measuring fish weight, eye to fork length, body cavity length, girth, vent girth and are taking mouth measurements. The digestive tract and gonads are removed and frozen for lab analysis. Preliminary results indicate that stomach contents increase in volume in the summer and decrease in winter. They are currently writing a description of the digestive tract. They also want to explore the potential use of paddlefish in restoring estuaries.

Bill Posey (ARGFC) discussed AR regulations and proposed regulation changes for paddlefish. Before Dec 2001 regulations included a 24" length limit, an Oct 1 – May 30 season and little or no reporting. They decided to manage for roe and in so doing allow most females to spawn at least once before harvested. The current license fee schedule and revised regulations (as of 9/2001): Roe buyer/exporter - \$1000; taker/seller - \$500; taker helper - \$100; non resident buyer - \$2000, reporting requirements, increased length limit to 32" and the season was set to Nov 1 – Apr 30. In Jan 2002 reports of paddlefish 'egg check' mutilation led to emergency closure of the AR River. During the 2002 season there were 50 taker permits and 5 buyers; 13, 584 lbs of eggs were harvested, 4581 fish were harvested. The local value of the harvest was \$343K, a \$900K export value, a \$2900 domestic value and \$33,200 worth of meat exported. Field sampling indicates most spawning occurred April 8 – 13 and is over by the end of Apr. They also noted a reduced amount of mutilation in 2002. The most recent regulation changes include: Nov 15 – Apr 15 season, mutilation and release is prohibited (if fish is cut it must stay in the boat and a portion of ovary must stay in fish), 36" length limit on Ark River, 32" on White River, 34" limit for rest of state and closure on Upper Ark River from Ozark L&D to OK border (36 miles). They've recently begun a mark/recapture study and thus far they've tagged 393 fish and recaptured 16. Some of the fish have moved 18 miles.

Ed Heist (SIUC) gave an impromptu presentation on genetic markers in sturgeon and said that microsatellites may provide better resolution in separating sturgeon species than previous methods. Microsatellite analysis and morphology are complementary. Microsatellites can be used to confirm morphological identification, and vice versa. Each locus possesses a large number of alleles (3 – 20) and there are a large number of loci available. McQuown, et al (2000) list over 70 polymorphic markers. This list was developed in a collaboration between SIUC and UC Davis. It's unlikely that a chosen microsatellite loci will be physically linked to genes that exert major influence on morphology. SIUC has collected tissue from pallids, shovelnose and their hybrids and is vouchering as much tissue as possible. It may be possible to use microsatellites to identify small specimens. There is uncertainty built into the models such that identifications are never 100% certain, but will be able to provide a confidence statement about which species it is. In the Middle Mississippi River investigators are confident that for fish > 250mm the Wills, et al, Character Index (CI) can separate the species and hybrids. SIUC is in the process refining their microsatellite work, there are 70 loci to chose from and they are working to find the best combination of loci with the best fit with results from CI identifications. Preliminary data indicate that pallids and shovelnose are reproductively isolated in the Middle Miss. There are a total of 21 loci now under investigation. In the future they should be able to use genetic assignments to fine tune the CI.

Upcoming 2003 Activities

- Complete 2003-2008 strategic plan
- Complete Standard Operating Procedures for sub-committee
- Develop standardized reporting for harvest and trade
- Update sub-committee directory
- Distribute updated paddlefish bibliography
- Expedite updates of website
- Plan paddlefish symposium for 2004 AFS Annual Meeting
- Begin work on sub-basin reports for Upper Mississippi, Lower Mississippi, and Missouri river
- Investigate funding for sub-committee activities
- Continue stock assessment
- 2003 Fall meeting

**Micra Paddlefish/sturgeon Committee Meeting
January 6 – 8, 2003 Sheraton Westport Hotel, St. Louis
Attendance List**

Name	Affiliation	Phone
Brent Bristow	USFWS/Tishomingo, OK	580-384-5710
Brent Gordon	OK Dept. Wldf.	918-686-3673
Chris O' Bara	WV DNR	304-420-4550
Tom Stefanavage	IN DNR	812-789-2724
Scott Hale	OH DNR	740-928-7034
Marie Maltese	USFWS/DSA	410-788-5372
Laura Noguchi	USFWS/DMA	703-358-2104
Jo Grady	USFWS- Columbia, MO	573-876-1911
Greg Conover	USFWS- Cartersville, IL	618-997-6869
Butch Atwood	IL DNR MS River Proj.	618-664-2330
Steve Krentz	USFWS - Bismarck, ND	701-250-4419
Jim Milligan	USFWS - Columbia, MO	573-876-1911
Bill Posey	ARGFC – Ronoke, AR	877-777-5580
Alan Allert	USGS-Cerc Columbia, MO	573-876-1889
Aaron DeLonay	USGS-Cerc Columbia, MO	573-876-1878
Gerald Mestl	NGPC Lincoln, NE	402-471-5447
Gene Zuerlein	NGPC Lincoln, NE	402-471-1542
Clifton Stone	SDGFP	605-734-4538
Bill Reeves	TWRA	615-781-6575
Robb Todd	TWRA	615-781-6575
Doug Henley	KYDFWR	502-564-7109
Bobby Reed	LDWF	337-491-2577
Dewayne French	USFWS-Mammoth Sprs, AR	870-625-3912
Rob Maher	IL DNR	618-466-3451
Les Frankland	IL DNR	618-842-2179
Phil Bettoli	TN TECH	931-372-3086
Jan Dean	USFWS-Natchitoches NFH	318-352-5324
Kim Graham	MDC/Retired	573-443-5732
Vince Travnichek	MDC	573-882-9880
Mike Thoma	USFWS	618-997-3344
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Bernie Kuhajda	Uni. Of Alabama	205-348-1822
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George Scholten	TTU Fish Unit	931-372-3701