PERFORMANCE REPORT

STATE: **MONTANA**

GRANT TITLE: **MONTANA ENDANGERED FISHES PROGRAM**
GRANT NUMBER: **E-7-10**

LOCATION: **MISSOURI RIVER, MONTANA**

PERIOD COVERED: **January 1, 2003 through December 31, 2003**

PROJECT PERSONNEL:

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OBJECTIVE:

1. **To determine habitat preference, movements, abundance, feeding and growth of wild pallid sturgeon in Recovery Management Area 1.**

2. **Conduct annual adult pallid sturgeon standardized netting to develop a baseline for future comparisons.**

3. **To assist with with collection of adult spawners for use in hatchery propagation efforts.**

4. **To assist with the release of hatchery-reared pallids and evaluate survival, growth and recruitment over the years.**

5. **To coordinate and implement recovery efforts in conjunction with North Dakota, South Dakota, and the U.S. Fish and Wildlife Service.**

COSTS: **A total of $?????? in federal and state funds were expended on this project.**

RESULTS:

A total of 735 hatchery-reared yearling pallids (1997 year class) were released into RPMA-1 during the summer, 1998. The pallid sturgeon augmentation plan called for annual stocking of juvenile pallids for 6 consecutive years, at which time the plan will be evaluated based on its effectiveness. However, in 1999 an irido virus was discovered in some of the pallid sturgeon lots at Gavins Point National Fish Hatchery and stocking in Recovery Management Area 1 (RMA-1) has been restricted to only stocking pallids originating from the river upstream of Fort Peck Dam. Finally, after 3 years of no stocking, a second pallid sturgeon release was accomplished in 2002. A total of 2,063 yearling pallids (2001 year class) were stocked at 4 locations in the study area during the summer, 2002. No pallids were stocked in RMA-1 during 2003 due to the lack of hatchery juveniles from sources upriver of Fort Peck

Dam. This report deals with monitoring and evaluating the success of these re-introductions and results of the pallid sturgeon sampling effort during the entire 2003 field season.

It is important to evaluate the success of the pallid sturgeon augmentation program so that problems can be resolved early on in the program. Stocking densities, age of stocked fish, acclimation and growth of stocked fish, and location of release sites are all important aspects for evaluating survival and ultimately recruitment of the released hatchery juvenile pallid sturgeon. The study area is a 176-mile reach (RM 1875-2051) of the Missouri River immediately upstream of Fort Peck Reservoir (Figure 1). Drift netting, setlining and angling were used to sample the hatchery pallids. Additionally, trawl sampling was conducted in the study area for assessing wild pallid and shovelnose sturgeon reproduction.

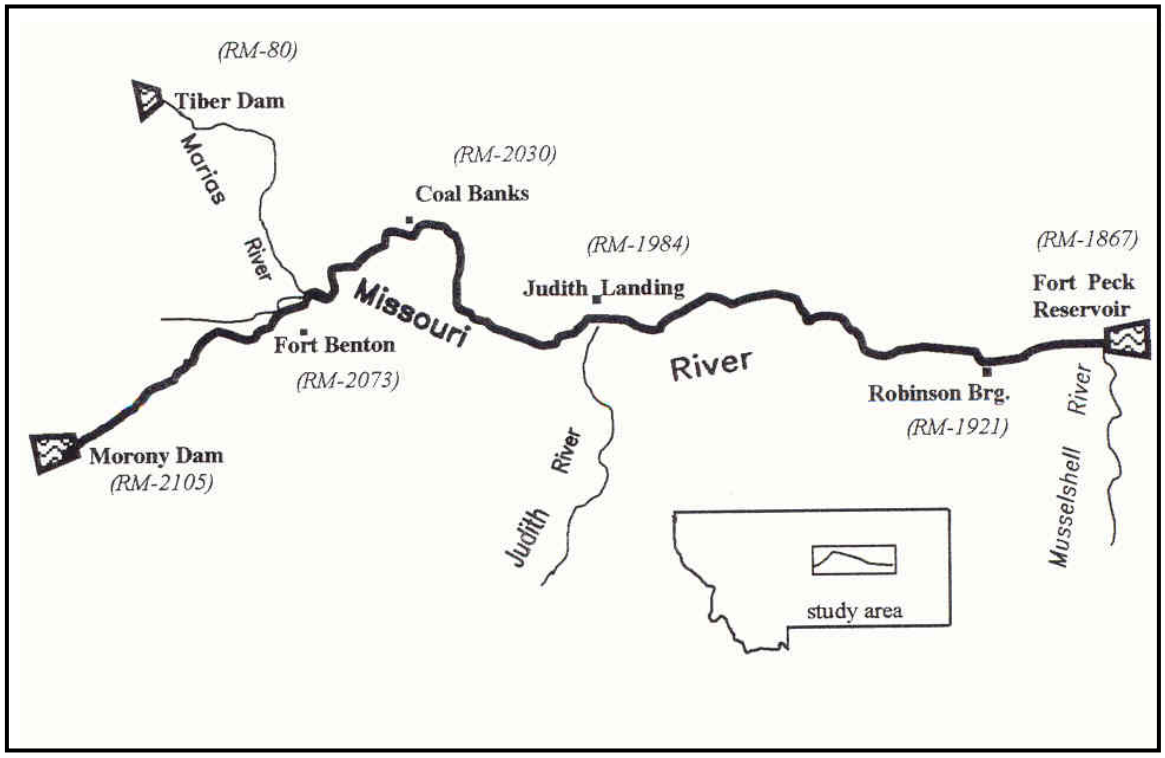

Figure 1. Map of the Middle Missouri River, MT, study area.

A total of 42 pallid sturgeon were captured this year; 8 adults (comprised of 5 recaptures and 3 new fish), 31 hatchery 1997-year class pallid sturgeon (PS-97) and 3 hatchery 2001-year class pallid sturgeon (PS-01) were captured (Table 1). All but two of the pallid sturgeon were captured in the Robinson Bridge Section (RM 1901 - 1921), although sampling occurred throughout the entire study area. Individual capture information is given in Appendix A.

Table 1. Effort by sampling method and number of pallid sturgeon captured in the Middle Missouri River, MT, during 2003.

	Effort	Adults	Juvenile-97	Juvenile-01	Total
Trammel net -	132 drifts	3	9	1	13
Spawning nets -	213 drifts	3	0	0	3
Trawl -	135 tows	0	0	0	0
Setlines -	25 sets	0	2	0	2
Angling -	33 hrs	0	13	0	13
MSU Study -	--	2	7	2	11
		8	**31**	**3**	**42**

Pallid sturgeon sightings, 2003:

Angler reports of pallid sturgeon sightings were recorded by MSU graduate students, FWP creel clerk, game wardens and the pallid sturgeon crew. All sighting reports were scrutinized for identification and accuracy because of the taxonomic similarities between pallid and the commonly caught shovelnose sturgeon. Only pallid sturgeon sightings that included observations of colored elastomere marks on the ventral rostrum, presence of a transmitter, actual measurements of inner and outer barbel lengths (OBL $\geq$ 2X IBL), body length measurements (TL > 1200 mm) or weight (>7,000 gm) were accepted as valid sightings.

Angler reports:

Number caught while snagging for paddlefish = 1 (adult)
Number caught while bait fishing = 2 (adult & juvenile)

Only 3 confirmed angler caught and released pallid sturgeon were reported this year. This spring again, the usual paddlefish creel was not conducted and is probably a factor for the lower number of reported sightings by the public. Several pallid sturgeon were observed by fisheries crews this year and probably is the results of more effort, presence of more hatchery pallids and improved sampling efficiencies at catching hatchery pallids.

Juvenile pallid sturgeon netting survey:

Attempts were made to capture the juvenile pallid sturgeon by drifting small mesh trammel nets. A total of 5 adults, 16 PS-97 and 3 PS-01 pallids were captured by drift netting (includes the MSU collections). Eighteen of the 24 pallids were captured in channel cross-over or inside bend habitat areas. About half the pallids were netted at depths of less than 2 meters. Additionally, a total of 992 fish representing 18 species were sampled while netting throughout the study area (Table 2). Shovelnose sturgeon, sauger and river carpsucker dominated the catch, comprising 34, 16 and 10 percent of the fish sampled, respectively.

Table 2. Average catch rates (no./drift) of fish sampled while drifting trammel nets in the Middle Missouri River, MT, April-October, 2003.

	Coal Bnk	Judith L.	Robinson	Total #
Blue sucker	0.2	0.1	--	10
Carp	0.3	0.3	0.3	45
Channel catfish	--	0.3	0.3	28
Flathead chub	0.2	0.4	--	12
Freshwater drum	--	--	0.1	7
Goldeye	1.4	2.3	0.2	86
Longnose sucker	1.6	0.4	--	46
Mountain whitefish	T			1
Paddlefish			T	2
Pallid sturgeon	T	T	0.2	22
River carpsucker	0.2	0.4	1.0	101
Sauger	0.5	0.9	1.3	148
Shorthead redhorse	1.9	1.5	0.2	88
Shovelnose sturgeon	8.8	3.2	0.9	347
Smallmouth buffalo	0.2	0.1	0.6	60
Stonecat	--	0.1	T	2
Walleye	0.1	0.3	0.1	16
White sucker	0.1			2
Total # fish	384	159	471	1,014
Total # drifts	25	15	92	132
Average depth (m)	1.4	1.9	1.8	1.7
Average distance (m)	381	352	279	337
Avg. duration (min.)	7.0	7.9	7.7	7.5
Macro-habitat type (%)				
CHXO	62	57	44	
ISB	21	7	24	
OSB	12	14	25	
SCC	5		1	
TRM		21	5	

Benthic trawling:

The main purpose for trawling was to evaluate pallid and shovelnose sturgeon spawning success. A total of 1,086 fish, representing 17 species, were sampled while trawling during August in the Coal Banks, Judith Landing and Robinson Bridge sections (Table 3). Most of the trawling occurred in the lower 36 miles of the study area between RM-1921 and RM-1885 where it is thought most of the age-0 SNS usually reside. Similar to years past, age 0 channel catfish, sicklefin chub, sturgeon chub and longnose dace dominated the catch comprising 41, 21, 13 and 9 percent of the fish sampled, respectively. Seven sturgeon chub were collected in the Missouri River reach RM-2025 to 2035. This was the first record reported for sturgeon chub this far upriver in the Missouri River. Prior to this, sturgeon chub have been found in the lower Marias River, the lower Teton River and Missouri River near Judith Landing (RM-1985) and at sites down river.

Only 2 age-0 SNS were sampled this year compared to 1 in 2002 (Gardner 2002). During the first year of intensive trawling (1995) a total of 28 age-0 SNS were sampled in about 100 tows (Gardner 1996) indicating this method was effective at sampling age-0 SNS when they are more numerous. Based on the low catches of age-0 SNS this year and previous years, it appears there has been poor SNS spawning success at least during the past 5 years.

Other sampling methods:

Setline fishing and angling enables us to effectively sample difficult places to net that could be important habitat areas for juvenile pallid sturgeon. Setlining is a more passive sampling technique than angling and easier to standardized, so that a fairly unbiased measure of abundance can be applied for this method. Only a minor effort, using these techniques, was initiated in 2003 because the main purpose was to evaluate the effectiveness of these unconventional methods. The setline sampling effort was light, consisting of only 25 sets over five days, however, two PS-97 were captured (Table 4). Additionally, a total of 64 fish, comprised of nine other species were sampled using the setlines.

Angling was one of the most productive methods used for capturing pallid sturgeon, particularly the PS-97 group. Fifteen hatchery PS-97 (including 2 from MSU), comprising about 36% of all pallids caught during this one-year period, were sampled while angling for approximately 33 angler hours spread out over 15 days (Table 1). Circle hooks, size 2 and 4 were used for both angling and setlines instead of the more common "J"-type hook, to prevent the pallids from swallowing the hook.

Fall pallid sturgeon standardized baseline survey:

A total of 6 pallid sturgeon were sampled while conducting the standardized fall survey in the 16-mile Robinson Bridge trend area (Table 5). The one adult, wild, pallid sturgeon that was netted was initially captured in 1991 and subsequently captured 3 more times over the years. Five juvenile hatchery pallids, 4 PS-97 and 1PS-01 were also netted during the survey. This baseline survey has been completed 7 times since 1996; Table 5 summarizes these survey results.

Table 3. Average catch rates (average number/tow) of fish sampled by trawling in the Middle Missouri River, MT, 2003.

	Coal Banks	Judith L.	Robinson	Total #
Burbot y			tr	2
Carp y	0.1			1
Channel catfish y	0.2	0.8	4.1	447
Emerald shiner		tr		1
Flathead chub	0.7	4.7	tr	74
Fathead minnow		0.1		1
Goldeye y			tr	3
Hybognathus spp	0.2		tr	5
Longnose dace	4.3	1.7		97
Mottled sculpin	0.1			1
Sauger y			tr	1
Shorthead redhorse y	2.0	0.4	tr	42
Shovelnose sturgeon y			tr	2
Sicklefin chub			2.2	230
Stonecat	0.2	0.3	0.3	31
Sturgeon chub	0.4	0.9	1.20	143
Walleye y			0.1	5
# Tows	18	12	105	135
Avg. Depth (m)	1.2	1.4	2.3	
Macro-habitat type (%)				
CHXO	56	42	55	
ISB	28	17	22	
OSB	11	8	17	
SCC	6		5	
TRM		33		

Table 4. Average catch rates (average number/set) of fish sampled by setlines in the Middle Missouri River, MT, 2003.

	- C P U E -		Total #
	Judith L.	Robinson	Fish
Carp	0.1	0.1	2
Channel catfish	0.6	0.1	6
Flathead chub	0.6	0.6	15
Goldeye	0.9	1.1	26
Pallid sturgeon		0.1	2
Sauger	0.3	0.1	4
Shorthead redhorse	0.4	0.2	6
Shovelnose		0.1	1
Stonecat	0.1	0.1	2
Walleye	0.3		2

Total # Fish	23	43	66
# Sets	7	18	25

Table 5. Sampling statistics recorded for the pallid sturgeon standardized sampling program in the Middle Missouri River, MT, 1996-2002.

	1996	1997	1999	2000	2001	2002	2003
Pallid Strugeon:							
Number sampled	3	1	1	3	4	4	6
Avg. Wt. (gm)	17,252	18,432	150*	272*	272*	3,586*	2,542*
Number/drift	0.06	0.02	0.02	0.06	0.08	0.08	0.12
Shovelnose Sturgeon:							
Number sampled	225	131	153	392	274	128	239
Avg Wt. (gm)	1,430	1,439	1,498	1,553	1,544	1,680	1,407
Number/drift	4.5	2.6	3.1	7.8	5.5	2.6	4.8
Avg. drift duration (min)	6.3	6.5	6.7	7.1	7.2	7.0	7.0
Avg. drift distance (m)	239	294	239	222	281	259	284
Avg. depth @ drift site (m)	2.2	2.5	2.2	1.8	1.4	1.6	1.6

* Juveniles present in sample

Propagation assistance:

Preserving a representation of the Upper Missouri River pallid sturgeon gene pool is an important goal for recovery. To that end, a pilot effort was initiated in 2000 to test the feasibility of collecting sperm from wild male pallids in this area and ship the fresh milt to Garrison National Fish Hatchery (GNFH) for use in their pallid sturgeon propagation program and cryopreserve representative sperm samples. Results from the initial effort proved worthwhile and collection of pallid sperm from the wild population was incorporated into my work plan.

River flow conditions during June, 2003 were somewhat normal, with discharges ranging from about 9,000 to 16,000 cfs during June. However, these higher June flows made netting for adult pallid sturgeon considerably more difficult than it had been during the previous low run-off years. Four males were captured and examined for spawning readiness. A list the pallid sturgeon captured and their sizes and tag numbers are presented in Appendix B. All of the male pallids were sexually mature and held in a 16 ft diameter tank for staging. Propagation in the study area did not occur again this year because a female pallid was not captured. Sperm samples from all the male pallid sturgeon were shipped to GNFH and cryopreserved for use in the future propagation effort and brood stock development.

Shovelnose Sturgeon Irido Virus assistance:

The Shovelnose Sturgeon Irido Virus (SSIV) was first discovered in a group of yearling shovelnose sturgeon at Gavins Point National Fish Hatchery during December, 1998. It was unknown where the virus originated, although most investigators suspect it may have originated from wild sturgeon brought into the hatchery. Because of the uncertainty of the virus origin, the viruses virulence and concern for wild sturgeon populations in Montana, FWP suspended all pallid sturgeon stocking (from outside sources) in RMA-1, beginning in 1999, until more information becomes available. This partial suspension of stocking pallid sturgeon in RMA-1, now in its 5th year, has severely limited recovery efforts in the area. Not only has the restriction reduced numbers of pallids released into RMA-1, but also, has reduced the number of families (genetic variability) that can be stocked. RMA-1 is loosing its value as a secondary brood stock reserve. Therefore, it is important to increase our knowledge on SSIV and re-evaluate the stocking restriction in this area relative to SSIV concerns. The USFWS Fish Health Lab, Bozeman, MT, initiated SSIV sampling of wild sturgeon in 1999 and this effort, along with the FWP health biologists, continues to collect samples each year. Tissue samples were collected from 50 shovelnose sturgeon from the Upper Missouri River, during 2003. These samples were fixed in a preservative and sent to the lab for histological analysis. No presence of the SSIV was found in the samples collected during 2003. The only place where SSIV infected sturgeon have been found was from sturgeon in a hatchery (brought in from the wild or raised in the facility). The MTFWP restriction of stocking hatchery pallids from outside sources above Fort Peck Dam has been modified. Presently, pallid sturgeon eggs collected at the spawning hatcheries are permitted to be shipped to the USFWS Bozeman Fish Tech Center (BTC) for rearing and subsequent stocking of the juveniles in RMA-1 providing no presence of SSIV is detected in these juveniles at BTC. Therefore, there are now plans to stock approximately 4,000 yearling pallids into RMA-1 during 2004.

Evaluation of pallid sturgeon reintroduction and other observations:

There are now two age-classes of stocked pallid sturgeon present in RMA-1; 735 PS-97 stocked in 1998 and 2,063 PS-01 stocked in 2002. Once again a considerable amount of effort was directed at evaluating the survival and growth of these released fish because over several million dollars have been invested raising them in the hatcheries for recovering and repopulating the Missouri River.

Attempts were made to sample as many juvenile pallids as possible for evaluation of growth, movement patterns, habitat selection and abundance estimates. All release site areas were sampled, although a much greater amount of effort was directed in the Robinson Bridge area. A total of 34 hatchery juvenile pallids were captured during 2003; 31 PS-97 and 3 PS-01. The small sample size of 3 for the PS-01 group limits any evaluation of survival and growth for this group. However, a relatively good number of PS-97 were sampled, so some trends can be detected for this group. There has been only one PS-97 recaptured for a second time in the past 5 years of sampling, indicating a fairly high density and, therefore, indicating a high survival rate of the PS-97's in RMA-1. The survival model used in the 1997 stocking plan (Krentz et al. 1997) predicts that 180 PS-97 will survive through age 6 (2003). Presently, intuitive observations indicate survival could be as great as that predicted by the model, however, a population estimate will have to be made to substantiate this claim. An estimate will be completed next year (2004) using the captured PS-97 this year as the marked group and the number captured next year as the recapture group. Pit tag numbers will be used as marks for identifying recaptured fish.

Twenty-nine PS-97 were captured in the Robinson Bridge area during the 2003 sampling period. Only 21 had PIT tags that were read. Of these 21, 38% (8) were initially stocked in the Robinson Bridge area and recovered at this location. Fifty-two percent (11) were released at either Judith Landing or Loma (upstream sites) and recovered at Robinson Bridge. This demonstrates that the two upriver release sites are contributing to the total population of PS-97 group, as well as the ones that were stocked in the lower Robinson Bridge area. Therefore, hatchery pallids should continue to be released at these upper sites as well as the lower one to insure greater survival. Past information on the PS-97 group shows a similar trend where 63% of the pallids captured at the Robinson Bridge were originally released at the upriver sites (Gardner 2001 & 2002).

A total of 58 PS-97's have been captured and measured over the past 6 years. Table 6 shows the average fork length for these pallids, although sample size is generally low. Over the last 5 years the PS-97 group has been growing at the average rate of 50 mm (FL) per year. This appears to be somewhat comparable to what has been reported for hatchery released white sturgeon in the Kootenai River, Idaho. Ireland et al. (2002) reports an average growth rate of 64 mm (TL) per year.

Table 6. Average sizes of the 1997- year class pallid sturgeon captured over the years since being released in 1998. Middle Missouri River, MT, 1998-2003.

	------ Average Fork-length (mm) at Age-class -----					
	1yr	**2yr**	**3yr**	**4yr**	**5yr**	**6yr**
Pallid juvenile-97 -	292	389	462	439	478	525
Number measured -	3	3	5	7	9	31

RECOMMENDATIONS

1. Continue with the intensive drift netting for HRJ pallid sturgeon. The success of the 1998 pallid release remains unknown and recapturing these fish will give better information on acclimation, survival and strategies for release locations. Additional sampling methods such as angling and setlines should be added to the sampling program and a measure of effort should be devised so that these methods can provide an accurate, quantifiable catch rate index.

2. The fall pallid sturgeon abundance survey should be continued on an annual basis as funding allows. The hatchery pallid sturgeon should be approaching a size where they are more effectively sampled and this effort will more accurately describe their abundance in the area and be a better measure for comparisons in the future.

3. The Upper Missouri River pallid sturgeon gene pool needs to be preserved. Efforts to collect sperm from ripe males and eggs from females should continue as conditions allow. The fresh sperm should be either used during the current propagation year or stored in cryopreservation.

4. Continue sampling for age-0 pallid and shovelnose sturgeon with the trawl. Trawling has provided a considerable amount of information on shovelnose spawning success and the distribution and abundance of several unique fish species such as the sicklefin and sturgeon chubs

5. Annual releases of hatchery pallid sturgeon are essential for developing a pallid population with a genetically diverse and sound age structure. This has not happened in RMA-1 because of the difficulty with propagation and a severely restrictive ban on releasing hatchery pallids in the area due to SSIV concerns. These potential fish that were not stocked due to the ban were invaluable because of the impending threat of extinction in the area. The MTFWP needs to consider allowing healthy hatchery pallid sturgeon to be stocked into RMA-1 from all the pallid sturgeon hatcheries providing they test negative for SSIV. This will insure that releases of pallid sturgeon will occur on a regular basis in RMA-1.

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Prepared by: William M. Gardner May 30, 2004

Appendix A. A list of pallid sturgeon captured in the Upper Missouri River, MT, 2003. Includes pallids captured by MSU study.

#	PIT Number	Color	Recap date	Recap Rivermile	Release Rivermile	Recap Meth.	FL (mm)	TL (g)	Type
1	414D45357E	Red	4/08/03	1915.5	1921.2	Set line	516	418	PS-97
2	414D54266F	Red	4/09/03	1905.6	1921.2	Trammel	526	454	PS-97
3	4526652B17	Green	4/09/03	1917.2	Lost PIT	Set line	490	581	PS-97
4	45292A661D	Yellow	4/09/03	1901.0	Lost PIT	Angling	493	504	PS-97
5	414D3A5536	Green	4/09/03	1917.8	2051.2	Angling	439	295	PS-97
6	41095B0556	Yellow	4/09/03	1902.7	2051.2	Angling	500	395	PS-97
7	414D3A365B	Orange	4/10/03	1912.7	1984.3	Angling	460	340	PS-97
8	414D542924	Blue	4/22/03	1916.2	2051.2	Angling	541	499	PS-97
9	414D547923	Red	4/22/03	1917.3	1921.2	Angling	488	499	PS-97
10	414D54611B	Orange	5/29/03	1917.1	1921.2	Angling	505	418	PS-97
11	45294F0A55	Yellow	5/30/03	1921.0	Lost PIT	Trammel	493	363	PS-97
12	414D621E44	Green	6/05/03	1913.2	1984.3	Angling	513	499	PS-97
13	45252B7F44	Green	6/05/03	1913.2	Lost PIT	Angling	503	413	PS-97
14	414D6010C69	Blue	6/09/03	1915.7	1984.3	Angling	564	563	PS-97
15	414D490E09	Green	6/10/03	1907.0	1921.2	Angling	490	431	PS-97
16	414D556218	Orange	6/18/03	1915.6	1984.3	Angling	554	563	PS-97
17	452A3D6110	Green	6/18/03	1915.6	Lost PIT	Angling	559	636	PS-97
18	414D404562	Blue	6/19/03	1915.4	2051.2	Angling	491	491	PS-97
19	414D605A40	Orange	7/01/03	1986.9	2051.2	Trammel	480	363	PS-97
20	414D5D7708	Orange	7/03/03	1913	1984.3	Trammel	549	538	PS-97
21	41094B2000	Yellow	7/10/03	1913.2	1984.3	Angling	522	462	PS-97
22	414D4B562F	Green	7/17/03	2030.3	2051.2	Trammel	589	708	PS-97
23	132277390A	Yellow	8/14/03	1907.8	Lost PIT	Trammel	557	552	PS-97

Appendix A. (Continued)_

#	PIT Number	Color	Recap date	Recap Rivermile	Release Rivermile	Recap Meth.	FL (mm)	TL (g)	Type
24	??	Yellow	8/28/03	1902.8	No reader	Trammel	551	553	PS-97
25	??	Orange	8/28/03	1907.8	No reader	Trammel	513	431	PS-97
26	4063672A09	Green	9/11/03	1911.3	2051.2	Trammel	756	1507	PS-97
27	414D5A6127	Orange	9/23/03	1917.1	1921.2	Trammel	510	430	PS-97
28	45297D3165	Green	9/23/03	1916.2	Lost PIT	Trammel	553	585	PS-97
29	414D55321F	Orange	9/23/03	1920.0	1921.2	Trammel	538	480	PS-97
30	4529314541	Green	9/24/03	1910.5	Lost PIT	Trammel	505	404	PS-97
31	414D3A0D77	Yellow	10/17/03	1912.2	1921.2	Trammel	525	458	PS-97
32	435E3D1C69	Brn/Bu	8/06/03	1902.7	1921.2	Trammel	295	105	PS-01
33	435F094944	Gr/Bu	8/19/03	1902.8	1921.2	Trammel	410	198	PS-01
34	435F151306	Brn/Bu	9/23/03	1916.5	2030.7	Trammel	328	95	PS-01
35	452A4E1F15	Wild	5/28/03	1916.0	New fish	Spawn net	1280	14980	Adult
36	452738076E	Wild	6/06/03	1916.3	New fish	Spawn net	1448	16980	Adult
37	411D0E2C5F	Wild	6/09/03	1916.0	1916	Spawn net	1422	16344	Adult
38	1F4A4B5973	Wild	6/13/03	1916.0	1916.0	Spawn net	1257	12712	Adult
39	132213574A	Wild	7/15/03	1917.3	New fish	Trammel	1308	--	Adult
40	41476A0462	Wild	8/15/03	1905.0	1916.5	Trammel	1264	--	Adult
41	45293C1509	Wild	9/23/03	1916.2	1916.2	Trammel	1280	--	Adult
42	411D0F252E	Wild	10/17/03	1912.1	1918.4	Trammel	1409	19500	Adult

Appendix B. A list of pallid sturgeon spawners captured during spring 2003, Upper Missouri River, MT.

PIT #	DATE	FL (mm)	WT (kg)	Rivermile	Sex	Recap
452A4E1F15	May 28	1283	15.0	1916.0	M	No
452738076E	June 6	1448	17.0	1916.3	M	No
1F4A4B5973	June 13	1257	12.7	1916.0	M	Yes
411D0E2C5F	June 9	1422	16.4	1916.0	M	Yes