

# **GAVINS POINT NATIONAL FISH HATCHERY AND AQUARIUM**

**YANKTON, SOUTH DAKOTA**



**ANNUAL REPORT  
FISCAL YEAR 2009**

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SECTION 1  
INTRODUCTION

## **INTRODUCTION:**

The Gavins Point National Fish Hatchery is located three miles west of Yankton, South Dakota on Highway 52, and was authorized by Congress on June 13, 1956 (70 Stat. 263). The Fish and Wildlife Act of 1956 (70 Stat. 1119) provided further authorization through defacto mitigation of the Upper Missouri Development Plan, a series of hydroelectric power dams on the Missouri River constructed by the Army Corps of Engineers. On August 14, 1946, and Act of Congress (60 Stat. 1080) granted the Department of the Interior, a permit to use for the purpose of constructing, operating, and maintaining a fish hatchery and other cultural improvements on United States Army Corps of Engineers land. Hatchery construction commenced in 1958, and the first fish were produced and distributed in 1961.

The Gavins Point National Fish Hatchery has played a key role in establishing and maintaining fishery resources within the Missouri River system and Midwestern states. Warm, cool, and cold water fish culture activities, along with paddlefish and pallid sturgeon propagation, make the Gavins Point National Fish Hatchery a unique facility within the National hatchery program. The Gavins Point Aquarium is an important component of the facility, which provides visitor orientation, promotes the Service's message, and displays both native and nonnative fish species found in the Missouri River system and tributaries in a simulated natural environment.

The Gavins Point National Fish Hatchery and Aquarium is comprised of:

30 1.3 Acre Rearing Ponds	1 Hatchery/Lab/Maintenance/Office
6 0.3 Acre Ponds	1 Six Stall Garage
8 Production Raceways	1 Aquarium/Public Use Facility
1 Booster Pump House for Lake Water	1 Brick Oil and Paint House
1 Brick Aerator/Generator Building	3 Wood Frame Residences
1 East Well House	1 Sturgeon Building
2 Steel Storage Sheds	1 Endangered Species Building
1 Well House for West well	1 Advanced Rearing & Broodstock Holding Facility
1 Well House for New well	2 Water Storage Tanks
1 Siphon Pump House Building	

Fish culture water is provided to the hatchery by one 24 inch waterline from Lewis & Clark Lake, and three wells (West Well), (East Well), and (New Well). The following table outlines water rights included with the facility.

<u>License</u>	<u>Priority Date</u>	<u>Permitted Flow</u>	<u>Status</u>	<u>Source</u>
954-3	12/21/1961	16 cfs	Active	Lake
953-3	12/21/1961	1.11 cfs	well capped 11/2007	
4224-3	02/08/1978	1.11 cfs	Active	East well
5907-3	12/26/1996	1.56 cfs	Active	West well
6733-3	06/07/2007	2.89 cfs	Active	New well

**SECTION 2**  
**BUDGET & PERSONNEL**

## FY2009 BUDGET - GAVINS POINT NATIONAL FISH HATCHERY & AQUARIUM

	1311	1321	1342	1664	2830	1937	8610	1263	4151	1262	1334	1121
Base Operations 64220-1311-0000	\$345,568											
FONS – Paddle Fish 64220-1311-0000	\$ 42,089											
FONS – Sturgeon 64220-1311-0000	\$115,688											
Annual Maintenance 64220-1321-A6GP		\$141,054										
Aquatic Nuis Species 64220-1342-000			\$8,000									
ISP Provider 64220-1664-7002				\$1,140								
Well #4 Project 64220-1262-0000 64220-1321-B6GP 64220-1334-0000		\$37,350								\$34,300	\$10,720	
ARRA Hatchery Lights 64220-4151-R6PE									\$10,000			
Private Lands– Rent 64220-1121-06TA												\$3,000
Corps of Engineers 64220-1937-6093						\$91,468						
Volunteer Funding 64220-1263-6003								\$300				
Visitor Enhancement 64220-2830-EF55					\$52,000							
Quarters 64220-8610-0000							\$11,033					
<b>TOTALS</b>	\$503,345	\$178,404	\$8,000	\$1,140	\$52,000	\$91,468	\$11,033	\$300	\$10,000	\$34,300	\$10,720	\$3,000
<b>GRAND TOTAL</b>	<b>\$903,710</b>											

## **HATCHERY STAFF 2009:**



**Kurt Schilling**  
Project Leader



**Diane Von Eschen**  
Administrative Officer



**Jeff Powell**  
Assistant Project Leader



**Tim Schroeder**  
Maintenance Mechanic



**Craig Bockholt**  
Fish Biologist



**Tom Kent**  
Fish Biologist



**Marv Ehlers**  
Fisheries Technician



**Aaron Von Eschen**  
Biological Science Tech



**Jason Rockne**  
Biological Science Tech

Jeff Powell served as the Acting Project Leader from January 9, 2009 until July 18, 2009. Kurt Schilling was promoted to Project Leader from the Iron River National Fish Hatchery in Wisconsin.

# SECTION 3

## FISHERIES INFORMATION SYSTEM

- A. STATION PROFILE
- B. ACCOMPLISHMENT MODULE
- C. FISH & EGG DISTRIBUTION ANNUAL REPORT
- D. FONS MODULE
- E. POPULATIONS
- F. PLANS

SECTION 4  
PADDLEFISH SPAWNING & CULTURE

# **PADDLEFISH SPAWNING REPORT 2009:**

## **Abstract**

Broodstock paddlefish (*Polyodon spathula*) were spawned at the Gavins Point National Fish Hatchery, Yankton, South Dakota on May 19<sup>th</sup> and 20<sup>th</sup>, 2009. The broodstock were captured on May 11<sup>th</sup>, 12<sup>th</sup> and 13<sup>th</sup>, 2009, in the Missouri River near the confluence of the Niobrara and Missouri Rivers as well as the Missouri River below the spillway at Lake Francis Case at Pickstown, SD. Eleven females and seventeen males were captured and transported back to the hatchery. The broodstock were injected with Luteinizing Hormone-Releasing Hormone (LH-RH) to induce ovulation and spermiation. A priming dose of LH-RH was administered to the male paddlefish at 3:30 pm on May 18th, 2009. Milt was precollected on May 20<sup>th</sup>, 2009. Priming doses of LH-RH were at .10 mg per kilogram of body weight. Females received a priming dose at 10:00 a.m. on May 19<sup>th</sup>, 2009. A resolving dose was administered to the female paddlefish at a rate of .90 mg per kilogram of body weight at 9:30 p.m. on May 19<sup>th</sup>, 2009. The females were spawned again this year by hand stripping. The females were spawned several times throughout the day on May 20<sup>th</sup>. Eggs from eight females were crossed with milt from fourteen males. A total of 875,338 green eggs (16.75 quarts) were spawned from these eight females. The average egg size was 52,222 eggs per quart. The hatch occurred from May 26<sup>th</sup> to May 28<sup>th</sup>, 2009. Mean percent eye-up at Gavins Point NFH was 78%, or 682,761 eyed eggs. An estimated 222,237 paddlefish eggs hatched, or 32.5 % of the eyed eggs hatching. All but a small portion of fry were kept at Gavins Point NFH and were utilized in extensive and intensive culture. 122,475 eggs were shipped to The University of West Virginia, 100 eggs and 500 fry were shipped to South Dakota State University.

## **Introduction**

Broodstock paddlefish (*Polyodon spathula*) were spawned at the Gavins Point National Fish Hatchery in Yankton, South Dakota on May 19<sup>th</sup> and 20<sup>th</sup>, 2009. Paddlefish broodstock were captured from the Missouri River near the Niobrara and Missouri River confluence area near Niobrara Nebraska as well as below the spillway of Lake Francis Case in Pickstown, SD. The water temperature during the capture event ranged between 48 and 53 degree Fahrenheit. Paddlefish were spawned to obtain enough eggs/fry for extensive culture purposes at Gavins Point National Fish Hatchery. These activities support restoration and research efforts of other agencies in accordance with MICRA, and supplemental wild paddlefish populations in Lake Francis Case by stocking hatchery propagated fish.

## **Methods and Results**

Twenty-eight paddlefish were captured from the Missouri River near the Niobrara and Missouri River confluence area near Niobrara Nebraska as well as the Missouri River below the spillway at Lake Francis Case at Pickstown, SD, using 150 ft. floating gill nets (3.5 inch mesh, bar measure). Fish were transported by truck to Gavins Point NFH in Yankton, SD. The truck towed a trailer which contained two large circular tanks with

water, oxygen and aeration. Oxygen was supplemented to the tank to minimize stress on the broodstock. The water temperature was 43-53° F in the main channel of the river.

Eight females and seventeen males were given a series of Luteinizing Hormone-Releasing Hormone (LH-RH), injections (Tables 1&3). Injections were given in the dorsal body musculature to induce ovulation and spermiation. A priming dose of LH-RH was administered at 3:30 p.m. on May 18<sup>th</sup>, 2009, to the male paddlefish at a rate of 0.10 mg per kilogram of body weight. Milt was precollected from the males and stored in Ziploc bags and refrigerated for egg fertilization at a later time (Table 3). After milt was collected, the males were placed back into 20' diameter circular tanks and kept until their release. Milt was checked for motility and had an average motility score of between 60 to 100 %. A priming dose of LH-RH was administered at 10:00 a.m. on May 19<sup>th</sup>, 2009 to the female paddlefish at a rate of 0.10 mg per kilogram of body weight. This year the females were placed into their own 20" circular tank with several males placed in the tank with them. This was done in hopes that the pheromones given off from the males would aid the females in spawning. At 9:30 p.m. on May 19<sup>th</sup>, a resolving dose was administered to the females at a rate of 0.90mg/kg body weight. Following the resolving dose, the females were observed beginning early in the morning of May 20<sup>th</sup> to determine if ovulation had occurred, as evidenced by free flowing eggs. All females were spawned by hand-stripping. This method of spawning appears to be less stressful on the large fish and has resulted in better overall egg quality. Each paddlefish broodstock was checked for the presence of a coded-wire tag. Those that did not have a coded-wire tag received one prior to their release.

Fertilization occurred by combining the precollected milt with the eggs. This year a 1:1 cross was utilized for fertilization. After the eggs were collected, 5 milliliters of milt was combined with 1 liter of water and then added to the eggs. The eggs were then stirred for approximately two minutes. Egg batches from eight females were crossed with milt from fourteen males. After fertilization, Fuller's earth was added to counteract the adhesive coating on the eggs and then stirred for twenty minutes. After stirring with the fuller's earth, the eggs were rinsed and then placed into MacDonald hatching jars. Fertilized eggs were allowed to water harden before they were inventoried and counted. The paddlefish eggs were incubated in well water with a small amount of lake water added to increase water temperature. Undeveloped and unfertilized eggs were removed daily by siphoning to prevent fungal and bacterial development.

Total paddlefish egg count at Gavins Point NFH was 875,338 eggs (Table 2). The total egg count was based on 16.75 quarts of eggs with an average number of 52,222 eggs per quart. Total estimated fertilized egg 682,731 or 78%. Incubation took place from May 20<sup>th</sup> to May 28<sup>th</sup>, 2009. The onset of the paddlefish fry hatch occurred on May 26<sup>th</sup>, with the main hatch occurring on May 27<sup>th</sup>, 2009. An estimated 222,237 or 32.5% eyed eggs hatched. This number is an estimate due to the fact that no mortalities were counted in the catch tank. There was a large number of fry that hatched but died before stocking. A majority of the paddlefish eggs and fry remained at Gavins Point NFH for extensive and intensive culture purposes. A total of three extensive culture production ponds were stocked on June 1<sup>st</sup>, 2009, with pond #9 receiving 57,600 fry, pond #12 receiving 56,000

fry and the remainder of the fry, 21,300, went into pond #8. In addition to these three extensive culture ponds, a small portion of fry were used in intensive culture. Four 6' circular fiberglass tanks were stocked with 6,400 fry each.

## Recommendations

Hand spawning remains to be the best method for spawning paddlefish and should be continued for future spawning seasons. Egg incubation with any amount of raw lake water should be avoided due to the heavy silt load and bacteria present in this water supply. Heated well water should be used to decrease the amount of eggs lost to bacteria and to increase the overall percent hatch.

**Table 1. Luteinizing Hormone-Releasing Hormone (LH-RH) dosage information, including identification color, weight, and dosage values for 7 female paddlefish injected during May 19<sup>th</sup>, 2009, at Gavins Point NFH, Yankton, SD.**

Identification	Weight	0.01 mg/kg	0.09 mg/kg	Total
Dose				
Tag	(kg)	body weight 05/23/06	body weight 05/24/06	(mg)
Green/pink	36.3	.18	1.6	1.78
Dark Green	25.5	.13	1.2	1.33
Red	28.0	.14	1.3	1.44
Black	33.0	.16	1.5	1.66
Neon Green	23.0	0	1.0	1.00
Brown/Orange	24.0	.12	1.4	1.52
Pink	26.1	.13	1.2	1.33
Blue	21.4	.1	1.0	1.10
Red/Yellow	26.6	.13	1.2	1.33
Pink/Polka Dot	17.7	.09	1.6	1.69
Yellow	19.1	.1	1.8	1.90
<b>Totals</b>	<b>280.7</b>	<b>1.28</b>	<b>14.8</b>	<b>16.08</b>

**Table 2. Egg production values including total quarts, eggs/quart, total eyed eggs and % eyed eggs for 7 female paddlefish spawned on May 16<sup>th</sup> and May 17<sup>th</sup>, 2007, at Gavins Point NFH, Yankton, SD.**

Identification % Tag eggs	Total Quarts	Eggs/Quart	Total eggs	Estimated eyed eggs	Estimated eyed-
Green/pink	4.69	52,228	244,950	191,061	78
Dark Green	3.14	52,228	164,167	128,050	78
Red	2.5	52,256	130,640	101,899	78
Black	2.3	52,185	120,025	93,612	78
Neon Green	1.56	52,340	81,650	63,687	78
Brown/Orange	1.13	52,025	58,788	45,854	78
Pink	.87	52,025	45,724	35,665	78
Blue	.56	52,489	29,394	22,973	78
Red/Yellow	0	0	0	0	0
Pink/Polka Dot	0	0	0	0	0
Yellow	0	0	0	0	0
<b>Totals/AVG</b>	<b>16.75</b>	<b>52,222</b>	<b>875,338</b>	<b>682,761</b>	<b>78%</b>

**Table 3. Milt Production values including weight, milt production, motility score and LH-RH dosage for each male paddlefish spawned May 18<sup>th</sup> & May 19<sup>th</sup>, 2009 at Gavins Point NFH.**

Identification Tag	Weight (kg)	Milt (ml)	Motility score %	LH-RH at .10 mg/kg body weight
Plaid/yellow	8.5	227	75-100	.04
White	9.6	318	50-60	.05
Purple	7.2	232	60-80	.04
Gold	11.1	345	70-100	.055
Plaid	8.5	203	100	.04
Neon Green	11.8	362	85-100	.06
Red	18.5	345	65-85	.09
Orange/Polka Dot	8.1	376	40-100	.08
Maroon	11.2	361	70-80	.056
Orange	9.0	347	20-50	.045
Pink*	6.0	285	50-90	.03
Black	7.5	249	95-100	.04
Blue/Orange	9.2	121	35-100	.04
Red/Purple	9.0	340	60-90	.045
Green	19.2	0	0	.09
Blue	19.8	0	0	.1
<b>Totals/Avg</b>	<b>174.2</b>	<b>4,111</b>	<b>69.3%</b>	<b>.88</b>

**Table 4. Distribution of paddlefish eggs, fry or fingerlings from Gavins Point NFH for fiscal year 2009.**

Date facility	Receiving water/	Number	weight	length	Eggs, fry or fingerlings	Reason for distribution
May 22 <sup>nd</sup> Research	U. of West Virginia	122,475	75 oz		eggs	
May 28 <sup>th</sup> Research	South Dakota State U.	500	12.5 oz	.75"	fry	
May 28 <sup>th</sup> Research	South Dakota State U.	100			eggs	
June 1 <sup>st</sup> Culture ponds	Gavins Point NFH	134,900	4,200 mls	.75"	fry	
June 1 <sup>st</sup> Culture tanks	Gavins point NFH	25,600	200 mls	.75"	fry	
July 27 <sup>th</sup> Outreach	State of Montana	33	1.34 lbs	7.6"	fingerlings	
August 11 <sup>th</sup> Health	Bozeman FHC	60	3.75 lbs	8.6"	fingerlings	Fish
August 13 <sup>th</sup> Outreach	Ak-Sar-Ben Aquarium	18	1.1 lbs	8.6"	fingerlings	
September 10 <sup>th</sup> Restoration	Missouri River, Yankton	5,132	546	10.3"	fingerlings	
<b>Total Paddlefish eggs, fry, and fingerlings shipped</b>		<b>288,818</b>				

## **PADDLEFISH INTENSIVE CULTURE REPORT 2009:**

### **Abstract**

Paddlefish (*Polyodon spathula*) were cultured both intensively as well as extensively during 2009 at Gavins Point National Fish Hatchery for supplemental stocking into Lake Francis Case. Total paddlefish hatch at Gavins Point was 161,000 fry. This year 25,600 fry were cultured intensively within the Sturgeon Building. Of the remaining 135,400 fry, 134,900 were extensively cultured in 3 earthen ponds and 500 fry were utilized for research at South Dakota State University. The surviving fry from intensive culture were coded-wire tagged and stocked into pond 6 to boost extensive culture numbers.

### **Introduction**

Paddlefish (*Polyodon spathula*) were intensively cultured at Gavins Point National Fish Hatchery during the 2009 fiscal year to boost extensively cultured fry numbers for supplemental stocking into Lake Francis Case. Paddlefish eggs were obtained from broodstock captured in the Missouri and Niobrara River confluence, near Niobrara, Ne, as well as the Lake Francis Case spillway in Pickstown, South Dakota. The paddlefish

were transported to Gavins Point to be spawned. 875,338 eggs were collected and placed into McDonald hatching jars. The total paddlefish hatch was 161,000 fry or 23.6 % of eyed eggs. Of this 161,000 fry, 25,600 were utilized for intensive culture purposes.

At Gavins Point NFH, 25,600 paddlefish fry were stocked into 4- six foot diameter fiberglass circular tanks within the Sturgeon Building

In addition, 134,900 paddlefish fry were utilized for extensive culture. These fry were stocked into earthen ponds. These fry were for future stocking into Lake Francis Case. Approximately 500 fry were utilized by South Dakota State University for research purposes.

## **Methods and Results**

Paddlefish intensive culture took place from June 1<sup>st</sup>, 2009 to August, 2009. 4-six foot circular fiberglass tanks were utilized during this culture phase. The 4 tanks used for the intensive culture phase were located in the Sturgeon Building. On June 1<sup>st</sup>, 2009, four tanks were stocked with 200 mls of fry. These fry were an average of 32 fry per ml for a total of 6,400 fry in each tank (Table 1.)

The paddlefish fry were reared on lake water with a small amount of well water added later on. The well water was added to keep the water temperature from becoming too high in the culture tanks. The temperature of the lake water was within a range of 59.5 to 73° F during this phase. The flow rate in each 6' tank was maintained at approximately 10 gallons per minute. This flow rate ensured the proper amount of water circulation in each tank without exhausting the newly hatched fry.

On June 11<sup>th</sup>, 3,200 paddlefish were moved into the South 20' tank in the Sturgeon Building to ease crowding in the 6' circular tanks. On, June 17, 2009, the remainder of the paddlefish fry, 3,506, was moved into the North 20' tank in the sturgeon Building. A majority of lake water was used during this phase and was in the range of 59.5 to 73° Fahrenheit

The fry were introduced to commercial diet on June 1<sup>st</sup> 2009. This initial diet consisted of a combination of Nelson & Sons Silver Cup starter and Gemma Diamond at a ration of 3:1 respectively (Table 2). The fry were fed 15 grams of feed, twice daily for a total of 30 grams per day. On June 4<sup>th</sup>, 2009, the feed amount was increased to 25 grams per feeding, twice daily for a total of 50 grams. This amount was gradually increased until a feed rate of 5 pounds of feed per day was achieved. Total amount of feed fed during intensive culture was 254 lbs at a total cost of \$199.82 (Table 2). Feed was dispensed by belt feeders as well as hand feeding. The tanks were cleaned daily to remove dead fry and excess feed.

On August 10<sup>th</sup>, 2009, the remaining fry in the intensive culture tanks were coded wire tagged and stocked into pond 6 to increase extensive culture numbers. From the initial stocking of 25,600 paddlefish fry, 1,112 paddlefish fingerlings survived to be coded wire-

tagged and stocked into pond 6 for extensive culture, for a survival rate of 4.3% (Table 1). The survival rate was low due to an outbreak of ichthyophthirius which occurred on August 5<sup>th</sup>, 2009. It is believed that an unseasonable drop in water temperatures was the main stressor responsible for the ichthyophthirius outbreak.

**Table 1. Tank stocking and survival information for each intensive culture tank stocked with paddlefish (*Polyodon spathula*) from June 1<sup>st</sup> to August 10<sup>th</sup>, 2009.**

Date	Tank	Number Stocked	Weight	Size	# Harvested	% survival
06/01/09	Sturgeon Building Tank 1	6,400	200 g	32/ml	1,359	21.2
06/01/09	Sturgeon Building Tank 2	6,400	200 g	32/ml	1,440	22.5
06/01/09	Sturgeon Building Tank 3	6,400	200 g	32/ml	1,744	27.3
06/01/09	Sturgeon Building Tank 4	6,400	200 g	32/ml	2,163	33.8
06/11/09	Sturgeon Building South 20'	3,200	600 g	2,421/lb	443	13.8
06/18/09	Sturgeon Building North 20'	3,506	750 g	2,195/lb	669	19.1

**Table 2. Food expenditures for intensively cultured paddlefish (*Polyodon spathula*) from June 1<sup>st</sup> to August 10<sup>th</sup>, 2009**

Feed	Total Weight Fed	Cost/pound	Total \$
Silver Cup Starter	6	.95	5.70
Gemma*	2.2	NA	NA
Silver Cup #1	30	.95	28.50
Silver Cup 1.5mm	120.5	.78	93.99
Silver Cup 2.5mm	95.5	.75	71.63
<b>Total/Avg</b>	<b>164.2</b>	<b>.82</b>	<b>199.82</b>

## **PADDLEFISH EXTENSIVE CULTURE REPORT 2009:**

### **Abstract**

Paddlefish (*Polyodon spathula*) were cultured extensively as well as intensively during 2009 at Gavins Point National Fish Hatchery for supplemental stocking into Lake Francis Case. Total paddlefish hatch at Gavins Point was 222,237 fry, with the majority of the fry utilized for extensive culture. 500 fry were sent to South Dakota State University for research purposes. In Phase I, three ponds were stocked with paddlefish fry. These three ponds were stocked with 134,900 fry. The mean survival rate for all ponds after phase I was 6.6%. In Phase II, paddlefish fingerlings from Phase I were stocked into pond 3. The survival rate after Phase II was 69.3% with 6,239 fish harvested. Phase III involved restocking all coded wire tagged paddlefish fingerlings from phase II into pond 5 as well as intensive cultured paddlefish into pond 6. The survival rate for Phase III was 72.4%.

On September 10<sup>th</sup>, 2009, 5,132 paddlefish fingerlings were stocked into the Missouri River below the Gavins Point Dam at Yankton, SD.

## **Introduction**

Paddlefish (*Polyodon spathula*) were extensively cultured at Gavins Point National Fish Hatchery during the fiscal year 2009 for supplemental stocking into Lake Francis Case. Paddlefish eggs were obtained from broodstock captured in the Missouri River and Niobrara River confluence, as well as the Missouri River below Lake Francis Case near Pickstown, South Dakota. The paddlefish were transported to Gavins Point NFH to be spawned. 875,338 eggs were collected and placed into McDonald hatching jars. The total estimated paddlefish hatch was 32.5% or 222,237 fry. 500 fry were requested from South Dakota State University in Brookings South Dakota. 134,900 fry were utilized by Gavins Point NFH for extensive pond culture.

At Gavins Point NFH, 134,900 paddlefish fry were utilized for extensive culture. These fry were stocked into three earthen ponds (Table1). These fry were for future stocking into Lake Francis Case. During extensive culture, three phases were used to rear paddlefish to facilitate stocking a requested 25,000, 9-12" fish into Lake Francis Case in September 2009.

## **Methods and Results**

Paddlefish extensive culture took place from June 1<sup>st</sup>, 2009 to September 10<sup>th</sup>, 2009. Three phases of extensive culture were used to maximize growth and enhance survival rates.

### *Phase I*

Phase I was initiated June 1<sup>st</sup>, 2009, by stocking 134,900 fry into three earthen ponds. Ponds 8, 9, and 12 were stocked June 1<sup>st</sup>, 2009 (Table1). Pond 8 received 651 milliliters of fry at 32 fry per milliliter for a total of 21,300. Pond 9 received 1,800 milliliters of fry at 32 fry per milliliter for a total of 57,600 fry. Pond 12 received 1,750 milliliters of fry at 32 fry per milliliter for a total of 56,000 fry. The paddlefish fry were stocked out at approximately four days post hatch.

Before paddlefish fry were stocked into earthen extensive culture ponds, each pond was mowed and then fertilized with 500 pounds of alfalfa meal (Table 2). In addition to fertilizer, each pond was treated with two gallons of soybean oil prior to stocking the fry, to kill predaceous insects (Table2).

During the early stages of phase I, paddlefish fry fed upon zooplankton and artificial feed, which was offered three times a day. Paddlefish fry were initially fed Silver Cup starter feed from June 1<sup>st</sup>, 2009 to June 23<sup>rd</sup>, 2009. On June 23<sup>rd</sup>, 2009 paddlefish were started on Nelson's Silver Cup 1.5mm salmon diet (Table 3). Extruded pellets were used to acclimate fish to surface feeding, because approximately half of the pellets float and

half sink in the water column. Paddlefish were fed commercial pellet food as a percentage of the total fish weight in each pond. During phase I, the paddlefish fry were fed five pounds of feed, three times daily. This feed rate remained the same for the paddlefish fry during phase I. Total amount of feed fed during phase I was 957 lbs of feed at a cost of \$899.21 (Table 3).

Paddlefish were harvested on July 8<sup>th</sup>, 2009. The total harvest for all paddlefish ponds was 9,020 fish (Table 1). Total weight of paddlefish harvested was 139 pounds with an average of 64.9 fish per pound. The overall survival rate for ponds in phase I was 6.7%. This survival rate was lower than in the previous culture season. This can be attributed to ponds 8 and 12 which had less than 1% survival.

### *Phase II*

Phase II was initiated by stocking the paddlefish fingerlings from phase I into pond 3, on June 8<sup>th</sup>, 2009. During Phase II, the paddlefish were fed Silver Cup starter 1.5 mm and 2.5 mm extruded steelhead floating pellet (Table 3). Feed rates were calculated based on a percentage of paddlefish body weight for the pond. The total amount of feed fed during phase II was 226 pounds at a cost of \$197.00 (Table 3). Phase II paddlefish were harvested on August 10<sup>th</sup>, 2009, with 6,239 fish harvested. Total paddlefish weight was 390 pounds with an average of 16 fish per pound (Table 1). All fish were coded-wire tagged after phase II by biologists from Gavins Point NFH, and the South Dakota Game, Fish and Parks. Paddlefish were tagged in the anterior of the rostrum and restocked to initiate phase III.

### *Phase III*

Phase III was initiated on August 10, 2009 when coded-wire tagged fish were restocked into ponds 5 & 6 for the final phase of extensive culture. Pond 5 was stocked with fish from pond 3, while pond 6 received the intensive cultured fish from the sturgeon building. A continuous flow of lake water was supplied to each pond to ensure adequate oxygen levels in the ponds as well as providing a source of zooplankton as an additional food source. Paddlefish were fed Nelson's Silver Cup 2.5mm and 3.5mm extruded steelhead floating pellets during phase III (Table 3). At the start of phase III, the daily feed rate was five pounds of feed fed three times daily and was gradually increased until a final rate of eight pounds of feed fed three times daily for pond 5, and a daily feed rate of two pounds of feed fed three times daily. This amount was considerably less than pond 5 due to the lower number of fish in pond 6. The total amount of feed fed during phase III was 608 pounds at a cost of \$437.60 (Table 3). On September 10, 2009, 5,132 fish were harvested from ponds 5 and 6, with a total weight of 535 pounds at 9.4 fish per pound (Table 1). The paddlefish harvested were stocked at the Riverside boat launch in the Missouri River near Yankton, South Dakota. 611 fish were inspected for coded-wire tag retention. Of these 611 fish, 563 fish retained tags for a tag retention of 92%.

### *Stocking*

Paddlefish were stocked into the Missouri River at Yankton, South Dakota on September 10<sup>th</sup>, 2009. Gavins Point NFH's distribution truck and four compartment trailer were used to transport the paddlefish. The trailer is equipped with four-200 gallon tanks, each supplied with oxygen through two ceramic stones at approximately 1.5 liters per minute. A paddle aerator was used to reduce carbon dioxide levels in the tank water. The stocking site below the Gavins Point Dam was chosen due to the Asian Clam issue at Gavins Point National Fish Hatchery. It was determined that due to the fact that Asian clams already exist below the dam there was little risk to the ecosystem.

**Table 1. Stocking and harvest information for each phase of paddlefish (*Polyodon spathula*) pond culture from June 1<sup>st</sup>, 2009 to September 10<sup>th</sup>, 2009.**

Date	Phase	Ponds						Total/Averages
		Pond 8	Pond 9	Pond 12	Pond 3	Pond 5	Pond 6	
6/1/09	I							
No. stocked		31,300	57,600	56,000				134,900
No/g		32	32	32				32
Weight (g)		651	1800	1750				4,201
7/8/09	I							
No. harvested		12	9,000	8				9,020
% survival		<1	15.6	<1				6.7
No/lb		65	65	65				65
Weight (lb)		<1	138	<1				
7/8/09	II							
No. stocked					9,020			9,020
No/lb					65			65
Weight (lb)					138			138
8/10/09	II							
No. harvested					6,239			6,239
% survival					69.2			69.2
No/lb					16			16.2
Weight (lb)					390			390
8/17/04	III							
No. stocked					6,070	1,019		7,089
No/lb					16	16		16
Weight (lb)					380	64		444
9/27/04	III							
No. harvested					5,029	103		5,132
% survival					82.9	10		72.4
No/lb					9.4	9.4		9.4
Weight (lb)					535	11		546

**Table 2. Pond treatments in pounds used on extensively cultured paddlefish (*Polyodon spathula*) ponds from June 1<sup>st</sup>, 2009 to September 10<sup>th</sup>, 2009, at Gavins Point NFH.**

Phase	Treatment	Ponds						Total (lbs)	Total Cost
		Pond 8	Pond 9	Pond 12	Pond 3	Pond 5	Pond 6		
I	Aquashade	0	2	0				2	75.80
	Soybean Oil	2	2	2				6	14.70
	Alfalfa Meal	1000	1000	1000				3000	240.00
II	Aquashade				1			1	37.90
	Soybean Oil								
	Alfalfa Meal				500			500	40.00
III	No Treatments								
								<b>Total Cost</b>	<b>\$ 408.40</b>

\* Aquashade and Soybean oil amounts are in gallons.

**Table 3. Food expenditures for cultured paddlefish (*Polyodon spathula*) during phase I, phase II, and phase III for extensive culture ponds from June 1<sup>st</sup>, 2009 to September 10<sup>th</sup>, 2009.**

Food	Pellet Size	Phase	Feed Amount (lbs)						Phase total	Phase cost
			Pond 8	Pond 9	Pond 12	Pond 3	Pond 5	Pond 6		
Silver Cup	#0	I	287	256.5	256.5				800	760.00
Silver Cup	#1	I	15	0	0				15	14.25
Silver Cup	1.5 mm	I	142	0	0				142	124.96
Silver Cup	1.5 mm	II				211.5			211.5	186.12
Silver Cup	2.5 mm	II				14.5			14.5	10.88
Silver Cup	2.5 mm	III					345	93	438	328.50
Silver Cup	3.5 mm	III					152	32	184	119.60
								<b>Totals</b>	<b>1,805 lbs</b>	<b>\$1,544.31</b>

**Table 4. Distribution and Stocking report for paddlefish for fiscal year 2009 at Gavins Point NFH**

<b>Date</b>	<b>Number</b>	<b>Egg, Fry Fingerling</b>	<b>Weight (lbs)</b>	<b>No/lb</b>	<b>Length</b>	<b>Location</b>	<b>Purpose for distribution</b>
05/22/09	122,475	eggs	4.7			University of West Virginia	research
05/28/09	500	fry	.78	14,528	.74"	South Dakota State University	research
05/28/09	100	eggs				South Dakota State University	research
07/27/09	33	fingerlings	1.34	22	7.6"	State of Montana	outreach
08/11/09	60	fingerlings	3.75	16	8.6"	Bozeman FHC	fish health
8/13/09	18	fingerlings	1.1	16	8.6"	Ak-Sar-Ben Aquarium	outreach
09/10/09	5,132	fingerlings	546	9.4	10.3"	Missouri River, Yankton, SD	restoration
<b>Totals</b>	<b>129,218</b>						

SECTION 5  
PALLID SURGEON ACTIVITIES &  
ACCOMPLISHMENTS

## **STURGEON ACTIVITIES AND ACCOMPLISHMENTS 2009:**

### **INTRODUCTION:**

The Gavins Point National Fish Hatchery (NFH) has been involved with endangered pallid sturgeon recovery efforts for 19 years. Activities include: spawning, rearing, tagging, and stocking of juvenile fish, the rearing of captive brood stock, and other recovery activities. Currently, the Hatchery is holding 2,740 captive brood stock in 132 families and 12 year-classes, maintaining cryo-preserved milt, and rearing just over 6,000 juveniles for spring 2010 stocking purposes. In addition, all fish are periodically sampled for disease, and captive adults undergo Investigational New Animal Drug (INAD) investigations. Modification to existing buildings and infrastructure is also ongoing, allowing for program improvements and expansion. Fiscal year 2009 activities and accomplishments are outlined in the sections below.

### **SPAWNING:**

The spawning program was extremely successful this year. One wild RPMA 2, and one wild RPMA 4 female were spawned this year. Each female was crossed with three males creating three families for each RPMA. Ripe wild males were cryo-preserved, and all fish were successfully returned to the wild. A total of 10 captive females were injected with LHRH hormone and eight were successfully spawned. The two fish that didn't spawn were extremely small (1.3 kg and 1.8 kg), and it is suspected that they were not fully mature. Thirteen different males were used, making 13 families of captive offspring for 2009 production purposes. Cryo-preserved milt was used for the first time during this year's spawning in an attempt to evaluate its effectiveness. A summary of each RPMA and captive spawning efforts follows.

#### **RPMA 4 Wild Brood Stock Spawning**

05/12/2009 – spawned female 434A00324C x 3 males, making 3 families:

P.I. scores = 04/22/2009 = 0.105; 05/06/2009 = 0.0685

Spawning temperature = 55 - 57°F Due to her P.I. scores, the RPMA 4 female was injected at 55°F and spawned at 57°F. This cooler temperature at spawning was a first in the history of the program as fish are normally spawned in the low 60's.

Oocyte maturation assay = 48% germinal vesicle breakdown

Total egg take = 36,363

7,000 eyed eggs shipped to Neosho NFH

29,263 eyed eggs were kept for incubation and rearing

**Family 1 = 434A00324C x 470C493F38**

motility = 95%

247 ml of eggs @ 47 eggs/ml = 11,587 eggs

**Family 2 = 434A00324C x 44235B7567**

motility = 95%

227 ml of eggs @ 47 eggs/ml = 10,688 eggs

**Family 3 = 434A00324C x 4703584B1B**

300 ml of eggs @ 47 ml/egg = 14,088 eggs

motility = 80%

Eye up was on 05/15/2009 = 99%

Hatch was on 05/18/2009 = 59% - 69%

Gavins Point received an additional 6,300 eyed eggs from Neosho NFH and 14,000 eyed eggs from Blind Pony State FH. The total number of eyed eggs kept for incubation and rearing was 48,663. All progeny from these egg takes were either stocked out in the fall of 2009 or transferred to Neosho NFH for over wintering. Stocking is summarized later.

A total of 23 wild fish were captured and brought into the hatchery for holding until spawning season. Seven were captured in the fall, and 3 became reproductive. Sixteen were captured in the spring with four becoming reproductive. A total of six males were reproductively ready, but only three were utilized. One was inadvertently released back to the wild, one was closely related to the female, and one was a hybrid. Males were held two weeks post spawn. Over the two weeks, water temperatures were cooled down and then ramped back up. Males were then re-injected with hormone and successfully re-spawned to collect milt for cryo-preservation. Four males were collected. This included the three that were spawned, and the one that was closely related to the female. Unfortunately, the samples were lost at Warm Springs FTC during the cryo process. All fish were returned to the nearest boat ramp in which they were captured in the wild, below Gavins Point Dam in the summer of 2009.

### **RPMA 2 Wild Brood Stock Spawning**

06/12/2009 – spawned female 470468383C x 3 males, making 3 families:

P.I. scores = 04/27/09 = 0.105; 05/12/09 = 0.090; and 5/25/09 = 0.081

Spawning temperature = 62°F

Oocyte maturation assay = 0% germinal vesicle breakdown

Total egg take = 154,211

30,651 eyed eggs were kept for incubation and rearing

**Family 1 = 470468383C x 7F7B023408**

motility = 90%

1,160.6 ml of eggs @ 41.4 eggs/ml = 47,799 eggs

38,693 eyed eggs were shipped to Garrison Dam NFH

**Family 2 = 470468383C x 47037F3026**

motility = 90%

1,064.5 ml of eggs @ 51.1 eggs/ml = 54,900 eggs

44,475 eyed eggs were shipped to Garrison Dam NFH

**Family 3 = 470468383C x 1F4A13453F**

motility = 90%

1,212.4 eggs @ 43.3 eggs/ml = 51,512 eggs

40,392 eyed eggs were shipped to Garrison Dam NFH

Eye up was on 06/14/2009 = eye up ranges from 22% -95%

Hatch was on 06/17&18/2009 = Hatch ranges from 0% - 35 % at 21 days which was the 1st attempt to enumerate total numbers of fish.

Gavins Point received an additional 62,729 eyed eggs from Miles City State FH and 57,904 eyed eggs from Garrison Dam NFH. The total number of eyed eggs kept for incubation and rearing was 151,284. Progeny from these egg takes will either be stocked out in the fall of 2009 or are being held for spring 2010 releases. Stocking is summarized later.

A total of four wild adults were captured for use in the 2009 Upper Basin pallid sturgeon spawning program. Three were male and one was female. All were reproductive and represented in this years spawning. All fish were released back into the wild at the HWY 85 Bridge near the confluence area in North Dakota, RPMA2.

### **Captive Brood Stock Spawning**

2009 was the first year that Gavins Point NFH successfully created fish from captive brood spawning activities. Females were spawned in 2008, but no offspring survived past the 21 day early rearing period. This year, two – 1992 year class, three – 1997 year class, and three - 1999 year class females were successfully spawned with resulting offspring being incorporated into the production program. Spawning occurred at 62 °F. Twenty-three males were originally injected for spawning. These males represented all year classes thought to be maturing. In the end, 13 males were used (including two cryoed), due to relatedness issues, low motility, or no milt production. A total of 13 families were created. A total of 165,759 eggs were taken and 15,807 eyed eggs were shipped off station for study purposes. Spawning of each year class is summarized below:

#### **1992 Year Class:**

Two females spawned were spawned with three males.

**06/10/2009: Spawned female 4624272D21 x two 1997 males, making two families**

P.I. Score = 06/04/2009 = 0.0842,

Oocyte maturation assay 96.5% germinal vesicle breakdown

Total egg take = 28,004

12,697 eyed eggs were kept for incubation and rearing

**Family 1 = 4624272D21 x 1F4A555072 (1997 male)**

motility = 100%

314.9 ml of eggs @ 55.2 eggs per ml = 17,390 eggs

10,000 eyed eggs were shipped to Milford State FH

**Family 2 = 4624272D21 x 4250324A29 (1997 male)**

motility = 75%

192.2 ml of eggs @ 55.2 eggs/ml = 10,614 eggs

5,307 eyed eggs were shipped to Milford State FH

Eye up was on 06/12/2009 = 86% and 89%

Hatch was on 06/16/2009 = not calculated

**06/10/2009: Spawned female 46240D4419 x one 1997 male, making one family**

P.I. Score = 04/27/2009 = 0.122, 06/03/2009 = 0.0894

Oocyte maturation assay = 100% germinal vesicle breakdown

Total egg take = 2,822

All eggs were kept for incubation and rearing

**Family 1 = 46240D4419 x 1F48472D25 (1997 male)**

motility = 80%

53.8 ml of eggs @ 52.3 eggs/ml = 2,822 eggs

Eye up was on 06/12/2009 = 21%

Hatch was on 06/16/2009 = not calculated

The progeny resulting from the 1992 females were shipped to South Dakota State University for research purposes. No 1992 offspring were stocked in any RPMA.

**1997 Year Class:**

Three females were spawned with five males including one cryoed male.

**06/10/2009 spawned female 1F4848153C x one 1997 and one 1998 male, making two families**

P.I. Score = 06/04/2009 = 0.0956

Oocyte maturation assay = 92.5% germinal vesicle breakdown

Total egg take = 35,757

All eggs kept for incubation and rearing

**Family 1 = 1F4848153C x 1F4A555072 (1997 male)**

motility = 100%

295.1 ml of eggs @ 65.4 eggs/ml = 19,310 eggs

**Family 2 = 1F4848153C x 424E680B49 (1998 male)**

motility = 100%

251.3 ml of eggs @ 65.4 eggs/ml = 16,477 eggs

Eye up was on 06/12/2009 = 75% and 81%

Hatch was on 06/16/2009 = not calculated

**06/18/2009 spawned female 406E683B4E x two 1997 males (one cryoed), making two families**

P.I. Score = 06/04/2009 = 0.113

Oocyte maturation assay = 100% germinal vesicle breakdown

Total egg take = 13,771

All eggs kept for incubation and rearing

**Family 1 = 406E683B4E x 1F4A34194A (1997 male)**

motility = 90%

155 ml of eggs @ 47 eggs/ml = 7,285 eggs

**Family 2 = 406E683B4E x 1F5001721E (1997 cryoed male)**

motility = 70%

138 mls of eggs @ 47 eggs/ml = 6,486 eggs

Eye up was on 06/20/2009 = 88% and 93%

Hatch was on 06/24/2009 = not calculated

**06/18/2009 spawned female 1F4A125B2A x one 2001 male, making one family**

P.I. Score = not calculated

Oocyte maturation assay = Not measured, due to fish being identified as ready to spawn only one day prior to spawning

Total egg take = 8,745

All eggs kept for incubation and rearing

**Family 1 = 1F4A125B2A x 4257397633 (2001 male)**

motility = 80%

165 mls of eggs @53 eggs/ml = 8,745 eggs

Eye up was on 0620/2009 = 81%

Hatch was on 06/24/2009 = not calculated

**1999 Year Class:**

Three females were spawned with five males (one cryoed), making five families

**06/10/2009 spawned female 4722243715 x one 1997 male and one 1998 male, making two families**

P.I. Score = 06/04/2009 = 0.0833

Oocyte maturation assay = 100% germinal vesicle breakdown

Total egg take = 40,557

All eggs kept for incubation and rearing

**Family 1 = 4722243715 x 424E3E6127 (1998 male)**

motility = 60%

366.7 mls of eggs @61.8 eggs/ml = 25,942 eggs

**Family 2 = 4722243715 x 1F48472D25 (1997 male)**

motility = 80%

236.6 mls of eggs @61.8 eggs/ml = 14,615 eggs

Eye up was on 06/12/2009 = 95% and 94%

Hatch was on 06/16/2009 = not calculated

**06/18/2009 spawned female 423A407701 x two 1997 males (one cryoed), making two families**

P.I. Scores = 06/03/2009 = 0.105

Oocyte maturation assay = 43% germinal vesicle breakdown

Total egg take = 28,153

All eggs kept for incubation and rearing

**Family 1 = 423A407701 x 1F4B26036D (1997 male)**

motility = 100%  
369 mls of eggs @ 47 eggs/ml = 17,343 eggs

**Family 2 = 423A407701 x 1F4838134E (1997 cryoed male)**

motility = unknown  
230 mls of eggs @ 47 eggs/ml = 10,810 eggs

Eye up was on 06/20/2009 = 94% and 78%  
Hatch was on 06/24/2009 = not calculated

**06/18/2009 spawned female 424D064501 x one 1997 male, making one family**

P.I. Scores = 04/27/2009 = 0.1399, 06/04/2009 = 0.1174  
Oocyte maturation assay = 93% germinal vesicle breakdown  
Total egg take = 7,950 eggs  
All eggs kept for incubation and rearing

**Family 1 = 424D064501 x 406E677B1F (1997 male)**

motility = 50%  
150 mls of eggs @ 53/eggs/ml = 7,950 eggs

Eye up was on 06/20/2009 = 22%  
Hatch was on 06/24/2009 = not calculated

**PRODUCTION:**

**2009 Production Season**

Gavins Point National Fish Hatchery stocked fish into Recovery Priority Management Area's (RPMA) 2 and 3 during the 2009 production season. The hatchery stocked 20,519 - 2008 year class pallid sturgeon and transferred 270 fish from the 2008 year class. A total of 4,579 fish from the 2009 year class were transferred to other facilities for production and research. The hatchery maintained disease free status on all production fish during the 2009 production season. The 2009 production lots originated from the Missouri River Upper Basin, Missouri River Middle Basin, Middle Mississippi, and for the first time, the Captive Brood stock.

Fall 2008 stocking included 2008 year class fish into RPMA's 2 and 3. Fish were all upper basin origin with an average length of 6.2 inches. RPMA 2 received a total of 17,761 fish. All fish received a double elastomer tag and were stocked into 6 sites: 2 sites on the Missouri River; Wolf Point and Culbertson, and 4 sites on the Yellowstone River; Forsyth, Intake, Fallon, and Sydney. RPMA 3 received 340 fish. Fish were stocked at Standing Bear Bridge and they received a double elastomer tag.

Spring 2009 stocking included 2008 year class fish into RPMA 2 and RPMA 3. Fish were all upper basin origin with an average length of 8 inches. RPMA 2 received a total of 2,078 fish. All fish received a double elastomer tag and were stocked into 5 sites: 2 sites on the Missouri River; Wolf Point and Culbertson and 3 sites on the Yellowstone River; Forsyth, Intake and Fallon. RPMA 3 received 340 fish.

Fish were stocked at Standing Bear Bridge and they received a double elastomer tag and the removal of the 4<sup>th</sup> right lateral scute.

Fish transfers from 2009 year class fish included 1,679 Middle Mississippi pallid sturgeon to Neosho National Fish Hatchery for over wintering, and 2,900 captive offspring to South Dakota State University for research studies. The remaining 2009 year class fish are scheduled for fall and spring stocking in fiscal year 2010.

Starter diets utilized in 2009 were a mixture of freeze dried cyclop-eeze and Otohime B1 and B2. The starter diets were transitioned to a larger particle size Otohime B2, C1 and C2 and fish were slowly weaned off freeze dried cyclop-eeze during the process. Diets then transitioned off Otohime C1 and C2 to Silver cup Salmon #2 and #3. There were no problems associated with fish transitioning between feeds sizes, brands, or starting on feed.

High mortality was observed during the first three weeks of production. Peak mortality occurred around day 4, 5, and 6. An observation trial was set up comparing heated well water to a lake and well water mix. Three upper basin origin families were used and the trial took place from hatch to 30 days post hatch. Survival was 20% on heated well water and 0.20% on lake and well water mix. High nitrogen gas levels appear to be the problem; future studies and removal methods are planned for FY 2010.

There are currently 5,815 - 2009 year class pallid sturgeon on station slated for stocking by June 2010, pending fish health results. A status decision will be needed for the disposition of the captive offspring which remain in the production cycle.

## 2009 Year Class Pallid Sturgeon Production

<b>Families</b>	<b>Fall Stocking (FY 2010)</b>	<b>Fish Transfers</b>	<b>Current Production</b>
<b>Upper Basin</b>			
- 6963 ♀ x 4E5D ♂	175	0	357
- 6963 ♀ x 534A ♂	269	0	1,188
- 6963 ♀ x 1939 ♂	45	0	147
- 755C ♀ x 6028 ♂	0	0	4
- 755C ♀ x 642C ♂	401	0	797
- 755C ♀ x 2208 ♂	26	0	149
- 165A ♀ x 523A ♂	70	0	196
- 165A ♀ x 5422 ♂	118	0	235
- 165A ♀ x 697C ♂	502	0	877
- 383C ♀ x 3026 ♂	52	0	106
- 0528 ♀ x 7B73 ♂	0	0	3
<b>Middle Basin</b>			
0324C ♀ x 7567 ♂	157	0	0
0324C ♀ x 3F38 ♂	73	0	0
0324C ♀ x 4B1B ♂	9	0	0
001A ♀ x 6A6F ♂	74	0	0
<b>Middle Mississippi</b>			
670A ♀ x 672A ♂	0	1,679	0
<b>Captive Offspring</b>			
- 3715 ♀ x 2D25 ♂	150	0	68
- 153C ♀ x 0B49 ♂	181	0	375
- 153C ♀ x 5072 ♂	885	400	1,313
- 2D21 ♀ x 5072 ♂	0	1,750	0
- 2D21 ♀ x 4A29 ♂	0	750	0
<b>Totals</b>	<b>3,187 Fish</b>	<b>4,579 Fish</b>	<b>5,815 Fish</b>

**Fall 2008 Pallid Sturgeon Stocking: 2008 year class**

**Upper Basin**

<b>Location</b>	<b>Family Cross</b>	<b>Number Stocked</b>	<b>Pounds Stocked</b>	<b>Length (Inches)</b>	<b>Tag Data</b>
Forsyth	5627 X 2071	100	2.1	6.17	Purple/Brown elastomer
Forsyth	1801 X 723D	100	2.1	6.17	Purple/Brown elastomer
Forsyth	5627 X 6471	373	8.1	6.17	Purple/Brown elastomer
Forsyth	532A X 592B	251	5.5	6.17	Purple/Brown elastomer
Forsyth	1801 X 755B	640	14	6.17	Purple/Brown elastomer
Forsyth	5627 X 162A	393	8.6	6.17	Purple/Brown elastomer
Forsyth	1801 X 453A	633	13.9	6.17	Purple/Brown elastomer
<b>SUB-TOTAL</b>		<b>2,490</b>	<b>54.30</b>	<b>6.2</b>	
Culbertson	1801 X 723D	210	4.6	6.17	Purple/Orange elastomer
Culbertson	5627 X 6471	1200	26.3	6.17	Purple/Orange elastomer
Culbertson	532A X 592B	759	16.6	6.17	Purple/Orange elastomer
Culbertson	1801 X 755B	659	14.4	6.17	Purple/Orange elastomer
Culbertson	5627 X 162A	1000	21.9	6.17	Purple/Orange elastomer
Culbertson	1801 X 453A	1270	27.9	6.17	Purple/Orange elastomer
<b>SUB-TOTAL</b>		<b>5,098</b>	<b>111.70</b>	<b>6.2</b>	
Wolf Point	5627 X 2071	395	8.6	6.17	Purple/Pink elastomer
Wolf Point	1801 X 723D	372	8.1	6.17	Purple/Pink elastomer
Wolf Point	5627 X 6471	1222	26.8	6.17	Purple/Pink elastomer
Wolf Point	532A X 592B	308	6.7	6.17	Purple/Pink elastomer
Wolf Point	1801 X 755B	415	9.1	6.17	Purple/Pink elastomer
Wolf Point	5627 X 162A	154	3.3	6.17	Purple/Pink elastomer
Wolf Point	1801 X 453A	767	16.8	6.17	Purple/Pink elastomer
<b>SUB-TOTAL</b>		<b>3,633</b>	<b>79.40</b>	<b>6.2</b>	
Intake	5627 X 2071	130	2.8	6.17	Purple/Yellow elastomer
Intake	1801 X 723D	250	5.4	6.17	Purple/Yellow elastomer
Intake	5627 X 6471	746	16.3	6.17	Purple/Yellow elastomer
Intake	532A X 592B	200	4.3	6.17	Purple/Yellow elastomer
Intake	1801 X 755B	1025	22.5	6.17	Purple/Yellow elastomer
Intake	5627 X 162A	223	4.9	6.17	Purple/Yellow elastomer
Intake	1801 X 453A	428	9.4	6.17	Purple/Yellow elastomer
<b>SUB-TOTAL</b>		<b>3,002</b>	<b>65.60</b>	<b>6.2</b>	
Fallon	1801 X 723D	150	3.2	6.17	Purple/Black elastomer
Fallon	5627 X 6471	830	1.8	6.17	Purple/Black elastomer
Fallon	532A X 592B	140	3	6.17	Purple/Black elastomer
Fallon	1801 X 755B	300	6.5	6.17	Purple/Black elastomer
Fallon	5627 X 162A	452	9.9	6.17	Purple/Black elastomer
Fallon	1801 X 453A	620	13.6	6.17	Purple/Black elastomer
<b>SUB-TOTAL</b>		<b>2,492</b>	<b>38.00</b>	<b>6.2</b>	
Sydney	1801 X 723D	70	1.5	6.17	Purple/Red elastomer
Sydney	5627 X 6471	239	5.2	6.17	Purple/Red elastomer
Sydney	532A X 592B	50	1.09	6.17	Purple/Red elastomer
Sydney	1801 X 755B	253	5.5	6.17	Purple/Red elastomer
Sydney	5627 X 162A	181	3.9	6.17	Purple/Red elastomer
Sydney	1801 X 453A	253	5.5	6.17	Purple/Red elastomer
<b>SUB-TOTAL</b>		<b>1,046</b>	<b>22.69</b>	<b>6.2</b>	
<b>RPMA 2 Totals</b>		<b>17,761</b>	<b>372</b>	<b>6.2</b>	

**Fall 2008 Pallid  
Sturgeon Stocking:  
2008 year class cont:**

<b>Location</b>	<b>Family Cross</b>	<b>Number Stocked</b>	<b>Pounds Stocked</b>	<b>Length (Inches)</b>	
Standing Bear Bridge	5627 X 2071	347	7.6	6.17	Purple/Yellow elastomer
Standing Bear Bridge	1801 X 723D	415	9.1	6.17	Purple/Yellow elastomer
Standing Bear Bridge	5627 X 6471	455	10	6.17	Purple/Yellow elastomer
Standing Bear Bridge	532A X 592B	313	6.8	6.17	Purple/Yellow elastomer
Standing Bear Bridge	1801 X 755B	600	13.1	6.17	Purple/Yellow elastomer
Standing Bear Bridge	5627 X 162A	417	9.1	6.17	Purple/Yellow elastomer
Standing Bear Bridge	1801 X 453A	863	18.9	6.17	Purple/Yellow elastomer
<b>RPMA 3 Totals</b>		<b>340</b>	<b>19.02</b>	<b>6.2</b>	
<b>Stocking Total</b>		<b>18,101</b>	<b>390.7</b>	<b>6.2</b>	
<b>Family Totals:</b>	5627 X 2071	972	21.1		
	1801 X 723D	1,567	34.0		
	5627 X 6471	5,065	94.5		
	532A X 592B	2,021	44.0		
	1801 X 755B	3,892	85.1		
	5627 X 162A	2,820	61.6		
	1801 X 453A	4,834	106		

**Spring 2009 Pallid Sturgeon Stocking: 2008 Year class**

**Upper Basin**

<b>Location</b>	<b>Family Cross</b>	<b>Number Stocked</b>	<b>Pounds Stocked</b>	<b>Length (Inches)</b>	<b>Tag data</b>
Forsyth	5627 X 6471	36	1.68	7.7	Purple/Brown elastomer
Forsyth	1801 X 753B	38	3.16	9.2	Purple/Brown elastomer
Forsyth	5627 X 162A	36	2.40	8.6	Purple/Brown elastomer
Forsyth	532A X 7624	10	0.33	7.0	Purple/Brown elastomer
Forsyth	532A X 592B	35	1.40	7.4	Purple/Brown elastomer
Forsyth	1801 X 723D	37	2.09	8.2	Purple/Brown elastomer
Forsyth	5627 X 2071	20	0.93	7.7	Purple/Brown elastomer
Forsyth	1801 X 453A	38	2.03	8.1	Purple/Brown elastomer
Forsyth	532A X 021A	8	0.29	7.2	Purple/Brown elastomer
<b>SUB-TOTAL</b>		<b>258</b>	<b>14.31</b>	<b>7.9</b>	
Culbertson	5627 X 6471	75	3.75	7.8	Purple/Orange elastomer
Culbertson	1801 X 753B	77	5.30	9.0	Purple/Orange elastomer
Culbertson	5627 X 162A	75	6.00	8.9	Purple/Orange elastomer
Culbertson	532A X 7624	22	0.80	7.1	Purple/Orange elastomer
Culbertson	532A X 592B	73	3.30	7.5	Purple/Orange elastomer
Culbertson	1801 X 723D	74	4.48	8.3	Purple/Orange elastomer
Culbertson	5627 X 2071	50	2.85	8.0	Purple/Orange elastomer
Culbertson	1801 X 453A	74	4.70	8.3	Purple/Orange elastomer
<b>SUB-TOTAL</b>		<b>520</b>	<b>31.18</b>	<b>8.1</b>	
Wolf Point	5627 X 6471	75	3.50	7.7	Purple/Pink elastomer
Wolf Point	1801 X 753B	77	6.40	9.2	Purple/Pink elastomer
Wolf Point	5627 X 162A	75	5.00	8.6	Purple/Pink elastomer
Wolf Point	532A X 7624	22	0.73	7.0	Purple/Pink elastomer
Wolf Point	532A X 592B	73	2.92	7.4	Purple/Pink elastomer
Wolf Point	1801 X 723D	74	4.19	8.2	Purple/Pink elastomer
Wolf Point	5627 X 2071	50	2.33	7.7	Purple/Pink elastomer
Wolf Point	1801 X 453A	74	2.74	8.1	Purple/Pink elastomer
<b>SUB-TOTAL</b>		<b>520</b>	<b>27.81</b>	<b>8.0</b>	
Intake	5627 X 6471	75	3.50	7.7	Purple/Yellow elastomer
Intake	1801 X 753B	77	6.40	9.2	Purple/Yellow elastomer
Intake	5627 X 162A	75	5.00	8.6	Purple/Yellow elastomer
Intake	532A X 7624	22	0.73	7.0	Purple/Yellow elastomer
Intake	532A X 592B	73	2.92	7.4	Purple/Yellow elastomer
Intake	1801 X 723D	74	4.19	8.2	Purple/Yellow elastomer
Intake	5627 X 2071	50	2.33	7.7	Purple/Yellow elastomer
Intake	1801 X 453A	74	2.74	8.1	Purple/Yellow elastomer
<b>SUB-TOTAL</b>		<b>520</b>	<b>27.81</b>	<b>8.0</b>	
Fallon	5627 X 6471	36	3.50	7.8	Purple/Black elastomer
Fallon	1801 X 753B	38	6.40	9.0	Purple/Black elastomer
Fallon	5627 X 162A	36	5.00	8.9	Purple/Black elastomer
Fallon	532A X 7624	10	0.73	7.1	Purple/Black elastomer
Fallon	532A X 592B	37	2.92	7.5	Purple/Black elastomer
Fallon	1801 X 723D	37	4.19	8.3	Purple/Black elastomer
Fallon	5627 X 2071	20	2.33	8.0	Purple/Black elastomer
Fallon	1801 X 453A	38	2.74	8.3	Purple/Black elastomer
Fallon	532A X 021A	8	0.29	7.2	Purple/Black elastomer
<b>SUB-TOTAL</b>		<b>260</b>	<b>28.10</b>	<b>8.0</b>	
<b>RPMA 2 Totals</b>		<b>2,078</b>	<b>129</b>	<b>8.0</b>	



Each member of the Pallid Sturgeon Propagation Committee was given an opportunity to voice their opinion on the disease, genetic, ANS, and logistical aspects of this modification to the Propagation Program. The consensus of the group was that this was a prudent decision and holding of wild pallid sturgeon in the Broodstock Building should be discontinued. The decision was discussed and approved by the Governing Board in September 2009.

A 2008 captive brood stock year class was created from the 2008 production lots. A total of 270 fish were kept representing 9 families.

**2008 Yearclass Pallid Sturgeon Broodstock (created summer 2009):**

Family Cross	Number Kept	Pounds	Length (Inches)
5627 X 6471	30	1.40	7.7
1801 X 753B	30	2.50	9.2
5627 X 162A	30	2.00	8.7
532A X 7624	30	1.00	7.0
532A X 592B	30	1.20	7.4
1801 X 723D	30	1.70	8.2
5627 X 2071	30	1.40	8.5
1801 X 453A	30	1.60	8.1
532A X 021A	30	1.10	7.2

**PIT Tag Retention for Captive Broodstock**

(Data collected November 13<sup>th</sup> and 14<sup>th</sup> 2007)

Year Class	Total # of Fish	# of Missing PIT Tags	PIT Tag Retention	Average Size of Fish When PIT Tagged
1992	11	0	100.0% ????	
1997	89	4	95.5%	18.0"
1998	47	1	97.9%	16.9"
1999	56	9	83.9%	18.1"
2001	76	3	96.0%	12.1"
2002	172	44	74.4%	10.5"
2003	473	39	91.7%	12.9"
2004	633	58	91.1%	11.1"
2005	377	49	87%	12.3"
2006	211	1	99.5%	13.1"

## Pallid Sturgeon Captive Broodstock Family Crosses

The 2,740 captive brood stock are made up of 132 families from 105 wild individuals.

	# of Captive Fish	Family Cross	# of Captive Fish	Family Cross
<b>1997</b>		<b>(5 Families, 5 Individuals)</b>	<b>2005</b>	<b>(14 Families, 14 Individuals)</b>
CROSS: 1F4A301354 ♀ x 1F4A4A1439 ♂	8		CROSS: 4443240458 ♀ X 444334021A ♂	18
CROSS: 1F4B246E04 ♀ x 7F7F06583D ♂	20		CROSS: 115676635A ♀ X 7F7B031F17 ♂	16
CROSS: 1F4A301354 ♀ x 7F7D291A07 ♂	21		CROSS: 115676635A ♀ X 1F50072169 ♂	12
CROSS: 1F4B246E04 ♀ x 1F4AA1439 ♂	10		CROSS: 7F7B026102 ♀ X 115553761A ♂	25
CROSS: 1F4B246E04 ♀ x 7F7D291A07 ♂	23		CROSS: 7F7B026102 ♀ X 7F7B023253 ♂	19
CROSS: UNDETERMINED FAMILY CROSS	3		CROSS: 115557165A ♀ X 1F50072169 ♂	26
			CROSS: 115557165A ♀ X 7F7B031F17 ♂	23
<b>1998</b>		<b>(2 Families, 3 individuals)</b>	CROSS: 115557165A ♀ X 7F7D2D723D ♂	25
CROSS: 7F7F056171 ♀ x 1F47760123 ♂	18		CROSS: 115676635A ♀ X 7F7D2D723D ♂	13
CROSS: 7F7F056171 ♀ x 1F4A363031 ♂	26		CROSS: 132213574A ♀ X 7F7B023253 ♂	22
CROSS: 7F7F056171 ♀ X UNDETERMINED ♂	1		CROSS: 132213574A ♀ X 1F482F3F2B ♂	21
			CROSS: 4443240458 ♀ X 115633183A ♂	17
<b>1999</b>		<b>(3 Families, 4 Individuals)</b>	CROSS: 44435F477B ♀ X 115553761A ♂	22
CROSS: 7F7B021573 ♀ x 113719262A ♂	17		CROSS: 4445F477B ♀ X 7F7B031F17 ♂	18
CROSS: 7F7B021573 ♀ x 7F7D441774 ♂	10		CROSS: UNKNOWN FAMILY CROSS	42
CROSS: 7F7B021573 ♀ x 7F7F06583D ♂	16			
CROSS: 7F7B021573 ♀ x UNDETERMINED ♂	6		<b>2006</b>	<b>(6 Families, 9 Families)</b>
			CROSS: 4064021213 ♀ X 1F477B4E51 ♂	28
<b>2001</b>		<b>(9 Families 12 Individuals)</b>	CROSS: 4064021213 ♀ X 115712453A ♂	56
CROSS: 411D262C1F ♀ x 1F4A4B5973 ♂	4		CROSS: 4064021213 ♀ X 7F7D291A07 ♂	25
CROSS: 411D262C1F ♀ x 41476A0462 ♂	17		CROSS: 4064021213 ♀ X 7F7D4A7758 ♂	15
CROSS: 411D262C1F ♀ x 411D0E2C5F ♂	10		CROSS: 1F497F1801 ♀ X 1F4A0B1A72 ♂	22
CROSS: 411D262C1F ♀ x 411D0B4E09 ♂	14		CROSS: 4443250A24 ♀ X 564D43745B ♂	18
CROSS: 411D262C1F ♀ x 17509415139 ♂	27			
CROSS: 220E345E09 ♀ x 1F4A111C6A ♂	12		<b>2007</b>	<b>(36 Families, 46 Individuals)</b>
CROSS: 220E345E09 ♀ x 1F4A27214F ♂	9		CROSS: 115557165A ♀ x 1F47760123 ♂	2
CROSS: 7F7F06672B ♀ x 7F7D3C5708 ♂	3		CROSS: 115557165A ♀ x 431565767B ♂	3
CROSS: 7F7F06672B ♀ x 115631222A ♂	4		CROSS: 1F4A36E66 ♀ x 115552116A ♂	2
CROSS: UNDETERMINED FAMILY CROSS	2		CROSS: 1F4A36E66 ♀ x 115631222A ♂	5
			CROSS: 40636B2945 ♀ x 1F4A312640 ♂	4
<b>2002</b>		<b>(7 Families, 9 Individuals)</b>	CROSS: 40636B2945 ♀ x 1F4A4B5973 ♂	6
CROSS 116224546A ♀ X 116167123A ♂	30		CROSS: 40636B2945 ♀ x 4443422E34 ♂	4
CROSS: 116224546A ♀ X 1F477B3A65 ♂	22		CROSS: 4443240458 ♀ x 132157621A ♂	2
CROSS: 132319571A ♀ X 7F7D461025 ♂	6		CROSS: 4443240458 ♀ x 1F4A206A0D ♂	1
CROSS: 4310187B69 ♀ X 7F7D434B54 ♂	2		CROSS: 4443240458 ♀ X 431565767B ♂	4
CROSS: 116224546A ♀ X 7F7D461025 ♂	24		CROSS: 4443240458 ♀ x 466C473C59 ♂	2
CROSS: 116224546A ♀ X 1F4A27214F ♂	33		CROSS: 4443240458 ♀ X 7F7E55466D ♂	1
CROSS: 116224546A ♀ X 220F107A6F ♂	18		CROSS: 454B380D60 ♀ x 7F7D4A7758 ♂	1
CROSS: 116224546A ♀ X UNDETERMINED ♂	7		CROSS: 454B490528 ♀ x 1F48472D25 *** ♂	2
			CROSS: 47037F460C ♀ x 7F7D487531 ♂	3
<b>2003</b>		<b>(13 Families, 14 Individuals)</b>	CROSS: 47037F460C ♀ x 1F4A5A5A63 ♂	9
CROSS: 7B7B016070 ♀ x 1F4A13592B ♂	9		CROSS: 47151A3D3A ♀ x 115669294A ♂	5
CROSS: 132256586A ♀ X 132157621A ♂	24		CROSS: 7F7B025D51 ♀ x 4441774C6E ♂	4
CROSS: 115679394A ♀ X 1F47760123 ♂	29		CROSS: 7F7B025D51 ♀ x 7F7D41431D *** ♂	19

**Captive Brood Family Crosses Cont:****2003:**

CROSS: 7B7B016070 ♀ X 1F4A363031 ♂	52
CROSS: 7F7B016070 ♀ X 7F7D291A07 ♂	28
CROSS: 132256586A ♀ X 132114552A ♂	29
CROSS: 132256586A ♀ X 1F47760123 ♂	15
CROSS: 7F7F054855 ♀ X 132313521A ♂	38
CROSS: 7F7B016070 ♀ X 41475D3C5D ♂	29
CROSS: 7F7F054855 ♀ X 115675486A ♂	46
CROSS: 7F7B016070 ♀ X 132313521A ♂	7
CROSS: 7F7B016070 ♀ X 1F521B1E56 ♂	25
CROSS: 7F7F054855 ♀ X 115669540A ♂	21
CROSS: 7F7B016070 ♀ X UNDETERMINED ♂	3

**2004 (28 Families, 28 Individuals)**

CROSS: 114476216A ♀ X 116167123A ♂	25
CROSS: 114476216A ♀ X 1F477B3A65 ♂	24
CROSS: 114476216A ♀ X 7F7D487531 ♂	28
CROSS: 114476216A ♀ X 220F107A6F ♂	20
CROSS: 114476216A ♀ X 1F4A27214F ♂	18
CROSS: 114476216A ♀ X 430E452777 ♂	21
CROSS: 114476216A ♀ X 1F4A4B5973 ♂	29
CROSS: 114476216A ♀ X 7F7E55466D ♂	17
CROSS: 114476216A ♀ X 431565757B ♂	14
CROSS: 114476216A ♀ X 1F4A312640 ♂	21
CROSS: 132211792A ♀ X 132235554A ♂	27
CROSS: 132211792A ♀ X 1F4A3E1445 ♂	29
CROSS: 132211792A ♀ X 7F7E42795C ♂	23
CROSS: 132211792A ♀ X 1F4A312640 ♂	29
CROSS: 7F7F066452 ♀ X 7F7F065834 ♂	17
CROSS: 7F7F066452 ♀ X 114473737A ♂	24
CROSS: 7F7F066452 ♀ X 1F4A3E1445 ♂	9
CROSS: 454B380D60 ♀ X 7F7D376F73 ♂	16
CROSS: 454B380D60 ♀ X 1F4A3E1445 ♂	13
CROSS: 454B380D60 ♀ X 7F7F065834 ♂	20
CROSS: 115551683A ♀ X 115552116A ♂	24
CROSS: 115551683A ♀ X 7F7D3C555D ♂	27
CROSS: 11555495A ♀ X 431565757B ♂	20
CROSS: 454910202B ♀ X 220F0F7677 ♂	25
CROSS: 454910202B ♀ X 1F47606357 ♂	28
CROSS: 454910202B ♀ X 115679374A ♂	26
CROSS: 4F5330401E ♀ X MIX ♂	24
CROSS: 1F5330401E ♀ X MIX2 ♂	20
CROSS: 115551683A ♀ x UNDETERMINED ♂	1
CROSS: UNKNOWN FAMILY CROSS	59

**2007:**

CROSS: 7F7FD66963 ♀ x 1F477B4E51 ♂	1
CROSS: 470378405D ♀ X 1F4B26036D *** ♂	28
CROSS: 47151A3D3A ♀ X 7F7D372A6B ♂	30
CROSS: 115553544A ♀ X 1F47652015 *** ♂	29
CROSS: 454B380D60 ♀ X 132114552A ♂	30
CROSS: 47037F460C ♀ X 7F7F066471 ♂	30
CROSS: 454B490528 ♀ X 424E36510D *** ♂	30
CROSS: 7F7FD66963 ♀ X 220E5F4928 ♂	30
CROSS: F7FD66963 ♀ X 115525534A ♂	30
CROSS: 47037F460C ♀ X 454B30016B6 ♂	29
CROSS: 470378405D ♀ X 115556461A ♂	30
CROSS: 40636B2945 ♀ X 44440A7B73 ♂	29
CROSS: 115553544A ♀ X 4441774C6E ♂	28
CROSS: 7F7B025D51 ♀ X 1F5001721E *** ♂	29
CROSS: 454B490528 ♀ X 4714560E0E **** ♂	25
CROSS: 115553544A ♀ X 115556461A ♂	21
CROSS: 470378405D ♀ X 1F4A34194A *** ♂	27
CROSS: UNKNOWN FAMILY CROSS	8

\*\*\* Captive Fish

**2008 (9 Families, 12 Individuals)**

CROSS: 470A675627 ♀ X 1F557B2071 ♂	31
CROSS: 115559532A ♀ X 1F4A13592B ♂	23
CROSS: 470A675627 ♀ X 115626162A ♂	30
CROSS: 470A675627 ♀ X 7F7F066471 ♂	29
CROSS: 115559532A ♀ X 444334021A ♂	24
CROSS: 1F497F1801 ♀ X 115712453A ♂	27
CROSS: 1F497F1801 ♀ X 7F7D2D723D ♂	30
CROSS: 115559532A ♀ X 7624 ♂	30
CROSS: 1F497F1801 ♀ X 753B ♂	29
CROSS: UNKNOWN FAMILY CROSS	5

## Wild Individuals Represented in the Captive Broodstock

#	Spawning Year(s)	Wild Parents Which Make Up The Captive Brood stock	Number of Offspring From Each Wild Parent	#	Spawning Year(s)	Wild Parents Which Make Up The Captive Brood stock	Number of Offspring From Each Wild Parent
1	2004	114476216A ♀	217	60	2004	1F47606357 ♂	28
2	2008	115559532A ♀ *	77) 127	61	2001	17509415139 ♂	27
2	2004	7F7F066452 ♀ *	50) Same fish	62	2004	115679374A ♂	26
3	2006	4064021213 ♀	124	63	1998	1F4A363031 ♂	26
4	2004	132211792A ♀	108	64	2004 + 2007	115552116A ♂	26
5	2006 + 2008	1F497F1801 ♀	108	65	2004 + 2007	1F4A312640 ♂	25
6	1997 + 1999	7F7F06583D ♂ *	36) 93	66	2004	220F0F7677 ♂	25
6	2008	435F557624 ♂ *	30) Same fish	67	2004	114473737A ♂	24
6	2004	7F7D3C555D ♂ *	27)	68	2008	1F4A13592B ♂	23
7	2008	470A675627 ♀	90	69	2006	1F4A0B1A72 ♂	22
8	2002	116224546A ♀	89	70	2004	1F4A3E1445 ♂	22
9	2007	470378405D ♀	85	71	2005	1F482F3F2B ♂	21
10	2006 + 2008	115712453A ♂	83	72	2001	220E345E09 ♀	21
11	2004 + 2007	454B380D60 ♀	80	73	2004	430E452777 ♂	21
12	2004	454910202B ♀	79	74	2004	115555495A ♀	20
13	2005 + 2007	115557165A ♀	79	75	2004	7F7F065834 ♂	20
14	2007	115553544A ♀	78	76	1998 + 2008	1F47760123 ♂	20
15	2001	411D262C1F ♀	72	77	1997	1F4A4A1439 ♂	18
16	1997 + 2006	7F7D291A07 ♂	69	78	2006	4443250A24 ♀	18
17	2007	7F7FD66963 ♀	61	79	2006	564D43745B ♂	18
18	2007	47037F460C ♀	59	80	2004	7F7F065834 ♂	17
19	2007 + 2008	7F7F066471 ♂	59	81	1999	113719262A ♂	17
20	2005	7F7B031F17 ♂	57	82	2005	115633183A ♂	17
21	2007	454B490528 ♀	55	83	2001	41476A0462 ♂	17
22	1997	1F4B246E04 ♀	53	84	2004	7F7D376F73 ♂	16
23	2007	7F7B025D51 ♀	52	85	2006 + 2007	7F7D4A7758 ♂	16
24	2004	115551683A ♀	51	86	2001	411D0B4E09 ♂	14
25	2007	115556461A ♂	51	87	2007	431565767B ♂	13
26	2008	1F557B2071 ♂ *	31) 49	88	2001	1F4A111C6A ♂	12
26	2004 + 2007	7F7E55466D ♂ *	18) Same fish	89	2001	411D0E2C5F ♂	10
27	2005	115553761A ♂	47	90	2007	4443240458 ♀	10
28	2001, 2002 + 2004	1F4A27214F ♂	47	91	1999	7F7D441774 ♂	10
29	2005	7F7B026102 ♀	44	92	2007	1F4A5A5A63 ♂	9
30	2004	4F5330401E ♀	44	93	2001 + 2007	115631222A ♂	9
31	1998	7F7F056171 ♀	44	94	2007	1F4A36E66 ♀	7
32	2005	132213574A ♀	43	95	2001	7F7F06672B ♀	7
33	2007	40636B2945 ♀	43	96	2002	132319571A ♀	6
34	1999	7F7B021573 ♀	43	97	2007	115669294A ♂	5
35	2002 + 2004	116167123A ♂	42	98	2008	1F4849755B ♂	5
36	2005 + 2008	444334021A ♂	42	99	2007	4443422E34 ♂	4
37	2005	115676635A ♀	41	100	2001	7F7D3C5708 ♂	3
38	2005	7F7B023253 ♂	41	101	2002	7F7D434B54 ♂	2
39	2005	44435F477B ♀	40	102	2007	132157621A ♂	2
40	2002 + 2004	1F477B3A65 ♂	39	103	2002	4310187B69 ♀	2

	Spawning Year(s)	Wild Parents Which Make Up The Captive Brood stock	Number of Offspring From Each Wild Parent
41	2001, 2004 + 2007	1F4A4B5973 ♂	39
42	2005	1F50072169 ♂	38
43	2005 + 2008	7F7D2D723D ♂	38
44	2005	4443240458 ♀	35
45	2007	47151A3D3A ♀	35
46	2004	431565757B ♂	34
47	2002 + 2004	220F107A6F ♂	33
48	2007	4441774C6E ♂	32
49	2004 + 2007	7F7D487531 ♂	31
50	2007	7F7D372A6B ♂	30
51	2007	115525534A ♂	30
52	2008	115626162A ♂	30
53	2007	132114552A ♂	30
54	2007	220E5F4928 ♂	30
55	2002	7F7D461025 ♂	30
56	1997	1F4A301354 ♀	29
57	2007	44440A7B73 ♂	29
58	2007	454B30016B6 ♂	29
59	2006 + 2007	1F477B4E51 ♂	29

	Spawning Year(s)	Wild Parents Which Make Up The Captive Brood stock	Number of Offspring From Each Wild Parent
104	2007	466C473C59 ♂	2
105	2007	1F4A206A0D ♂	1

Spawning Year	Captive Fish	# of Offspring
2007	424E36510D ♂ ***	30
2007	1F47652015 ♂ ***	29
2007	1F5001721E ♂ ***	29
2007	1F4B26036D ♂ ***	28
2007	1F4A34194A ♂ ***	27
2007	4714560E0E ♂ ***	25
2007	7F7D41431D ♂ ***	19
2007	1F48472D25 ♂ ***	2

\*\*\* These fish were spawned with wild fish

SECTION 6  
LAKE YANKTON ACTIVITIES

## **LAKE YANKTON ACTIVITIES 2009:**

Gavins Point NFH, the Nebraska Game and Parks Commission, and South Dakota Game Fish and Parks meet every other calendar year to coordinate data collection, fisheries options, and future plans for the management of Lake Yankton. In years with a meeting, spring and fall assessments are performed to collect fish samples for analysis by state biologists.

The biennial Lake Yankton meeting was held February 18, 2009. Some aspects of lake management were discussed, including past years sample data, fish population trends, fish conditions, stocking efforts, and aquatic plant management.

Standardized sampling was conducted May 5<sup>th</sup> and 6<sup>th</sup> 2009 using electro-fishing gear to assess the largemouth bass population and trap nets to monitor panfish populations (black crappie and bluegill). Length and weight data were taken for these fish as well as scale samples for aging. Fall assessment work, using gill nets will occur in early FY 2010. Length and weight data will be recorded for all fish species caught, and scale and fin samples will be taken from walleye and channel catfish respectively, for aging. All data is sent to the Nebraska Game and Fish Commission and combined with spring assessment data for analysis. Results are pending.

Stocking continued this year with 30,088 two inch walleye fingerlings being stocked on June 9, 2009. In previous years, fish were released via boat away from shore to evaluate improvements in survival. Management data suggests no additional survival using this method. As a result, fish were stocked directly from the truck this year. Methods will continue to be evaluated to optimize fish survival.

SECTION 7  
MAINTENANCE

## **MAINTENANCE ACTIVITIES 2009:**

The following is a list of equipment purchases or maintenance items that were completed this year:

### **Equipment;**

The Jeep Wrangler was replaced with a Jeep Patriot with Recovery Act Funds.  
The John Deere Gator was replaced with an EZ-GO utility cart.  
A new single compartment 300 gallon fish distribution tank was purchased with COE (1937) funds.  
A new two compartment (150 gal each side) 300 gallon fish distribution tank was purchased.  
A new 72 inch rear discharge Hustler Brand mower was purchased.  
Purchased new cryo-freezer unit.  
Installed new water supply valve on Pond #14.  
Purchased 3 new lap-top computers.  
Purchased new misc. hand tools and a large standing tool box.

### **Endangered Species Building:**

Electrical system was upgraded to allow the installation of incubation jar heaters.  
Heaters were purchased and installed on the incubation jar batteries.  
A phone cable upgrade (50 pair) was completed from the Hatchery Building.  
Installed new linoleum in the main office.  
Installed security lights.

### **Hatchery Building:**

Two 6 foot fiberglass rearing tanks were purchased.  
Interior lighting was replaced with more efficient waterproof units with Recovery Act Funds.  
Ceiling was repainted.  
Painted exterior of raceway walls.  
Purchased exhaust fan for chemical room.  
Installed new carpet in office.  
Installed new linoleum in the visitor restrooms.

### **Broodstock Building:**

A 30 foot fiberglass rearing tank was purchased with COE (1937) funds.  
Two 12 foot fiberglass rearing tanks were purchased.  
Re-worked drum filter unit (crack repair) and re-weld motor frame.  
Installed security lights.

### **Old Water Tower:**

Installed clean-out in distribution line.  
Replaced the packed column with assistance from COE.

## **MAINTENANCE ACTIVITIES 2009 cont:**

### **New Water Tower:**

Installed 10 inch valves and Y connection into existing line for new well #4 (to be installed in FY2010).

### **Aquarium:**

Completed trailer pads.

Converted storage area into Friends Gift Shop.

Installed safety railing at rear entry way.

Installed safety bumpers on propane tank.

Moved five trees to trailer pad area.

Completed new displays.

### **Quarters:**

Installed new kitchen cupboards in Quarters #3.

Installed new flooring in kitchen in Quarters #4.

## SECTION 8

# FRIENDS GROUP AQUARIUM ACTIVITIES VOLUNTEER REPORT VISITOR DATA

## **FRIENDS OF GAVNINS POINT NFH ACTIVITIES 2009:**

### **Youth Fishing Derby:**

The annual fishing derby and open house was held April 18, 2009. Children between the ages of four and twelve were in attendance along with parents and other members of the public. Tours were given of the facilities. Local law enforcement provided fish cleaning and DARE information, and free refreshments were offered. Many rainbow trout were taken by young anglers. The rain did not dampen the spirits of the attendees.

### **National Conference:**

Treasurer Robert Alink attended the Fisheries Friends Initiative Conference held February 2009 in Washington, D.C. While there, he met with members or staff of the house and senate from South Dakota to promote hatchery awareness.

### **Brochure:**

The group developed a tourist brochure (rack card) highlighting things to see at the hatchery and aquarium. Placement is in South Dakota rest stops, and local Chamber of Commerce.

### **Membership:**

The group continues to campaign for new members. A few business and individual members have been added. The group is also trying to obtain more skilled directors.

### **Riverboat Days:**

A hatchery truck and distribution trailer was decorated with Mardi gras masks and beads for this year's Mardi gras theme parade.

### **Gift Shop:**

The gift shop was stocked with items bought through DC Booth's Friends. Ice cream treats, souvenirs, and books were well received, but fish food to feed the trout was the most popular purchase.

### **Volunteer Camp Pads:**

Construction was completed on two camping pads behind the aquarium for the first official volunteers to arrive in the spring of 2009. Crushed asphalt and rock was installed for the pads. Cable TV and internet access were also installed.

### **Membership Picnic:**

A membership and guests picnic was held in September. Picnic food was served, and members and guests were invited to be or stay active with the organization. A recap of accomplishments was presented as well as the outlook for the coming year. New Board members were also elected at the meeting.

### **AQUARIUM HIGHLIGHTS 2009:**

Rock panel backgrounds were installed in 7 of the display tanks to render a more natural appearance.

A new frog display was completed with a larger pond, natural filter / hiding area, artificial turf, and painted diorama for a natural looking exhibit.

A large leucistic snapping turtle was added to the reptile display. Two fish species were added to displayed fish.

Visitor numbers increased by 15% compared to 2008 numbers. Visitors signed-in from 47 states, Washington, D.C. and 13 countries.

49 school groups and 34 organizations were given tours of the hatchery and grounds.

Master Gardeners planted lilies on islands in the parking area. Perennials planted on three sides of the aquarium building last year did very well this year.

Two camping pads were completed for volunteers. Cable, internet, electricity and water were installed to the sites. Two concrete pads were poured for patio use for the volunteers.

A gift shop area was completed for the Friends group. A new wall was constructed, display counters and shelves installed, and new lighting added.

### **VOLUNTEER REPORT 2009:**

The volunteer program was very successful this year. In all, six children and 24 adults donated 1,306 hours of time to the hatchery. 2009 was the first year that the new trailer pad sites were utilized by two sets of couples, who volunteered at the Hatchery from mid-April through August. Bill and Libby Hodges, and Bill and Jacque Beaver provided a total of 1,085 hours to the Hatchery performing tours, doing light maintenance, staffing the Aquarium gift shop, completing office assignments, performing lawn care, and assisting with fish culture work. Major accomplishments included a redo of the visitor display in the Hatchery Building and success with the Aquarium gift shop.

The remaining hours provided to the Hatchery were primarily for resource work or educational activities and from work done during our annual kids fishing derby.

Plans are in place to continue the program in 2010. The [volunteers.gov/gov](http://volunteers.gov/gov) web site will be used to advertise our summer positions. Local recruitment involving our Friends group will continue to occur.

**VISITOR DATA 2009:**

State	REGISTERED VISITORS TO THE AQUARIUM								2009	Difference	%
	Apr	May	June	July	Aug	Sept	Oct	Total	08		
AK		2	5	7	19		4	37	10	27	270.00%
AL			3	1	2			6	2	4	200.00%
AR		3	13	14			8	38	30	8	26.67%
AZ			24	24		2	2	52	44	8	18.18%
CA		18	14	43	36	4	1	116	105	11	10.48%
CO	6	13	44	61	17	14	5	160	137	23	16.79%
CT					2			2	8	-6	-75.00%
DE					2			2	0	2	
FL		2	12	17	22			53	49	4	8.16%
GA			4	12				16	16	0	0.00%
HI		1		2			2	5	9	-4	-44.44%
IA	15	368	417	640	438	232	7	2117	2091	26	1.24%
ID		3	11	7		2	4	27	17	10	58.82%
IL	4	15	16	43	37	2		117	47	70	148.94%
IN			3	15	7			25	29	-4	-13.79%
KS		10	17	75	22	6	2	132	129	3	2.33%
KY			3	15	2	1	6	27	24	3	12.50%
LA			3	12	4	2		21	7	14	200.00%
MA					7			7	9	-2	-22.22%
MD			2	7		9		18	1	17	1700.00%
ME	2				3			5	7	-2	-28.57%
MI	2	4	10	38			3	57	44	13	29.55%
MN	11	56	93	172	66	33	2	433	396	37	9.34%
MO	4	27	25	24	9	4		93	107	-14	-13.08%
MS					6	2		8	11	-3	-27.27%
MT			6	2				8	5	3	60.00%
NC			12	15				27	26	1	3.85%
ND		2	17	17	11			47	36	11	30.56%
NE	166	794	853	1133	810	391	46	4193	3628	565	15.57%
NH								0	2	-2	-100.00%
NJ			10		1			11	0	11	
NM			7	9	3			19	7	12	171.43%
NV		3	6		4	2		15	22	-7	-31.82%
NY		2	1	10	7			20	12	8	66.67%
OH		16	2	9	25			52	37	15	40.54%
OK		1	32	41	16		6	96	57	39	68.42%
OR		2	5	6	9	4		26	19	7	36.84%
PA	2	8	11	47	3	2		73	23	50	217.39%
RI								0	7	-7	-100.00%
SC		2		3				5	2	3	150.00%
SD	194	755	1039	1157	865	313	26	4349	3685	664	18.02%
TN		2		1	5		3	11	12	-1	-8.33%
TX		4	34	31	25	6	7	107	97	10	10.31%
UT	1							1	7	-6	-85.71%
VA			8	2	2			12	19	-7	-36.84%

State	Apr	May	June	July	Aug	Sept	Oct	Total	08	Difference	%
VT								0	5	-5	-100.00%
WA	4	1	17	12	5	5		44	27	17	62.96%
WI		2	31	18	27	9		87	72	15	20.83%
WV			4	5	7	1	2	19	4	15	375.00%
WY			16	2	12	2	5	37	33	4	12.12%
DC					2		5	7	2	5	250.00%
Australia								0	2	-2	-100.00%
Brazil		2						2	4	-2	-50.00%
Canada	5		5	5	13			28	4	24	600.00%
Czech Republic								0	2	-2	-100.00%
China					22			22	7	15	214.29%
Costa Rica								0	2	-2	-100.00%
Denmark								0	9	-9	-100.00%
England		2		3		2		7	8	-1	-12.50%
France			5					5	0	5	
Germany			44		4			48	14	34	242.86%
Ghama								0	3	-3	-100.00%
Ireland								0	1	-1	-100.00%
Jaimaca			5					5	0	5	
Japan					6			6	2	4	200.00%
Latvia								0	2	-2	-100.00%
Mexico			15					15	0	15	
Netherlands								0	2	-2	-100.00%
Nicaragua								0	1	-1	-100.00%
Norway						11	1	12	12	0	0.00%
Peru				2				2	0	2	
Philippines								0	2	-2	-100.00%
Polland								0	3	-3	-100.00%
South Africa			3			1		4	0	4	
South Korea								0	5	-5	-100.00%
Sweden								0	12	-12	-100.00%
Switzerland								0	4	-4	-100.00%
Taiwan								0	4	-4	-100.00%
Tanzania					1		2	3	3	0	0.00%
Venezuela								0	1	-1	-100.00%
<b>TOTALS</b>	<b>416</b>	<b>2120</b>	<b>2907</b>	<b>3759</b>	<b>2586</b>	<b>1062</b>	<b>149</b>	<b>12999</b>	<b>11284</b>	<b>1715</b>	<b>15.20%</b>

(1) Data is actual figures for guests that signed in. (usually about 1 in 8)

2008 had an decrease of 5% compared to 2007

2009 had an increase of 15% over 2008