**PERFORMANCE REPORT**

**STATE: MONTANA**

**PROJECT NO.: SE-7-2 STATEWIDE ENDANGERED SPECIES PROGRAM**
**STUDY/JOB NO.: TE-6 MISSOURI RIVER PALLID STURGEON**
**LOCATION:**

**Northcentral Montana**

**Job Duration: July 1, 1996 through June 30, 1997**

**Cost: A total of $8,532 in federal funds were expended, along with the state's 10% matching share, for a total of $xx,xxx. An amendment to the grant agreement was filed on May 23, 1997 for extending the agreement period to December 31, 1997.**

**Principal Investigator:**

**Bill Gardner Lewistown, MT**

**Job Objectives:**

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**1. Determine habitat preferences, movements, abundance, feeding and growth of pallid sturgeon in Montana. Progress was made on this objective and results are reported below.**

## RESULTS

All of the sampling was confined to the lower 30 miles of the 180-mile Missouri River study area located near Lewistown Montana. A sampling plan was developed for evaluating the success of pallid sturgeon reintroduction in the study area. The plan requires sampling a designated 17 mile reach from RM 13 to RM 30 (Rock Creek to Upper Two Calf Creek). This was designated as the sampling reach because here is where the majority of pallid observations in the past 6 years have been recorded, especially in the fall. It was assumed that a total of 50 trammel net drifts would be an adequate effort to survey the reach for sub-adult and adult pallid sturgeon. Selection of drift sites was determined using a stratified-random process. The reach was divided into 170, 0.2-mile locations. A total of 30 sites were randomly drawn reach-wide, and an additional 20 locations were selected from sites where pallid sturgeon were previously captured. These locations were sampled during the period 9/23 - 10/01.

A total of 3 pallid sturgeon were captured during the survey. The statistics for these fish are given in Table 1. All 3 fish were most likely older fish based on their sizes. Statistics for the survey:

Number of pallids/drift = 0.06 Number of
pallids/minute of drift = 0.009
Number of pallids/distance (yards) drifted = 0.0002
Number of shovelnose/drift = 4.5
Number of shovelnose/minute of drift = 0.71
Average drift duration = 6.3 minutes
Average drift distance = 239 yd
Average drift site depth = 7.1 ft

The radio telemetry study determining habitat preferences of juvenile sturgeon was continued this year. Juvenile shovelnose sturgeon were telemetered and used as a surrogate species for pallid sturgeon because no juvenile pallids were captured. A total of 6 shovelnose, ranging in size from 0.28 - 1.75, were surgically implanted with a 2 gram transmitter and monitored during the period 7/25 - 10/21. Only 16 relocations were made on these fish because of either the difficulty capturing the fish resulting in a delayed start, or difficulty detecting the fish in deep water. Of the 6 transmittered sturgeon, 3 fish were relocated at least 3 times; 2 sturgeon appeared to have died (based on their stationary location for several weeks and/or their location in shallow depositional areas); and one could not be located after 3 weeks.

The 3 telemetered sturgeon, #'s 021, 640 and 660, moved downstream an average of 9.8 miles from their release sites. Generally, the greatest downriver move occurred within the first week after they were implanted with the transmitter and released, after which, they remained in a localized area. Eight habitat measurements were taken on these three fish and are given in Table 2. The sturgeon were found in deep, moderately swift current areas that averaged 8.7 ft deep, with a current velocity of 2.3 ft/s.

The telemetry system appeared to work fairly well with the transmitters's signal being received in depths up to 15 feet. The two smallest sturgeon probably died resulting from complications with the surgical implants. Therefore, it is recommended that these transmitters be implanted in sturgeon no smaller than 0.50 lbs. A greater amount of tracking-time than was given for this study, needs to be allocated for future work in order to get a more comprehensive description of sturgeon habitat preferences.

Table 1. Measurements and capture information for pallid sturgeon sampled in the upper Missouri River, MT, Sept/Oct 1996.

| | Pallid Sturgeon | | |
|---|---|---|---|
| Tag Number | 17600296132 | 34354641585 | G-01352 |
| Fk Length (in.) | 55.5 | 55.5 | 55.0 |
| Weight (lb.) | 41.0 | 38.5 | 37.8 |
| Sex | -- | -- | -- |
| Capture Date | Sep 24 | Sep 25 | Sep 27 |
| Rivermile | 27.5 | 22.0 | 19.0 |
| Method | Net | Net | Net |
| Depth (ft) | 6.0 | 12 | 7 |
| Velocty. (fps) | Moderate | Moderate | Moderate |
| Substrate | Sand | Sand | Sand |
| Temperature | 53 | 54 | 50 |
| Secchi (ft) | 1.2 | 2.0 | 2.0 |
| Recap Record | new | Tagged 5/6/92 | Tagged 7/10/91 |

Table 2. Habitat conditions at sites where transmittered juvenile shovelnose sturgeon were located, Missouri River, 1996.

| Fish Number | 640 | 640 | 021 | 021 | 660 | 660 | 660 | 660 |
|---|---|---|---|---|---|---|---|---|
| Date | 9/5 | 9/12 | 9/4 | 9/12 | 9/4 | 9/5 | 9/12 | 10/24 |
| Relocation Depth (ft) | 11.0 | 10.2 | 8.0 | 9.7 | 9.5 | 5.7 | 6.4 | 9.2 |
| Max depth @ site (ft) | 14.5 | 12.5 | 11.0 | 10.0 | 11.7 | 6.0 | 11.6 | 9.2 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Relocation col. vel. (fps) | 2.3 | 2.2 | 2.4 | 2.0 | 2.8 | 2.3 | 2.0 | 2.6 |

## RECOMMENDATIONS

The standardized sampling procedure used this year for evaluating the abundance of pallid sturgeon in the area appears to work well. The sampling program should be conducted for 2 years in succession so that a sound baseline for future comparisons can be made. This sampling program should then be conducted biannually after 1997.

Monitoring juvenile sturgeon using radio telemetry appeared to work well. The next step will be to better characterize the habitat requirements of juvenile sturgeon so that when hatchery reared juvenile pallid sturgeon are released in this area, release locations and timing will be favorable for maximizing the reintroduction. The juvenile sturgeon radio telemetry study should be expanded to include the monitoring of several more fish (30 - 60). This will enable us to get a better description of the habitat and area preferences that these fish require.

**Benefits:**

Results of this study will be used for evaluating the impact future stocking of hatchery reared juvenile pallid sturgeon will have in the area. With a quantified index of pallid abundance for the study area we will be able to compare the present low abundance with the future abundance after pallid sturgeon reintroduction begins and better evaluate this program.

The radio telemetry study will help us maximize success of the pallid release by defining suitable release habitats and providing insight on juvenile recruitment for adjusting stocking densities.