

**Protocol for transect counts and paddlefish netting on Fort Peck Reservoir,  
Montana.**

by

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The Paddlefish Management Plan requires that accurate annual indices of age-0 paddlefish abundance be obtained in upper Fort Peck Reservoir. Little is known about the annual recruitment and habitat use of the juvenile fish. Previous research on Fort Peck Reservoir (Kozfkay 2000) and Lake Sakakawea, North Dakota (Fredericks and Scarnecchia 1997), have used a method of visual counts as a means of producing an annual indices of recruitment to each of these stocks. Fredericks and Scarnecchia (1997) found this method of visual counting to be preferable over trawling, both with regards to *time spent*, expense and *quality of info. obtained* ~~data gained~~. Kozfkay (2000) counted 97 age-0 and 54 age-1 paddlefish in the headwaters of Fort Peck Lake using this method in 1998. These preliminary results suggest that visual counts may be reliable indices of age-0 and age-1 paddlefish abundance.

Relative abundance of age-0 paddlefish will be obtained using transect method previously implemented on the reservoir by Kozfkay (2000). Stations will be set in the headwaters of the reservoir using a Global Positioning System (GPS). The uppermost station will be created as far up river as the boat can safely be driven. A total of six

stations will be created, each placed 1 km down reservoir from the end of the previous station. Each station will have three transects. Transects will be positioned at one quarter, one half, and three quarters of the way across the reservoir. Eighteen total transects 1.5 km long, will be created longitudinally along the reservoir using the GPS. The first of these eighteen transects will start at approximately 3,010 rkm, near the mouth of Crooked Creek and the Musselshell River (Figure 2).

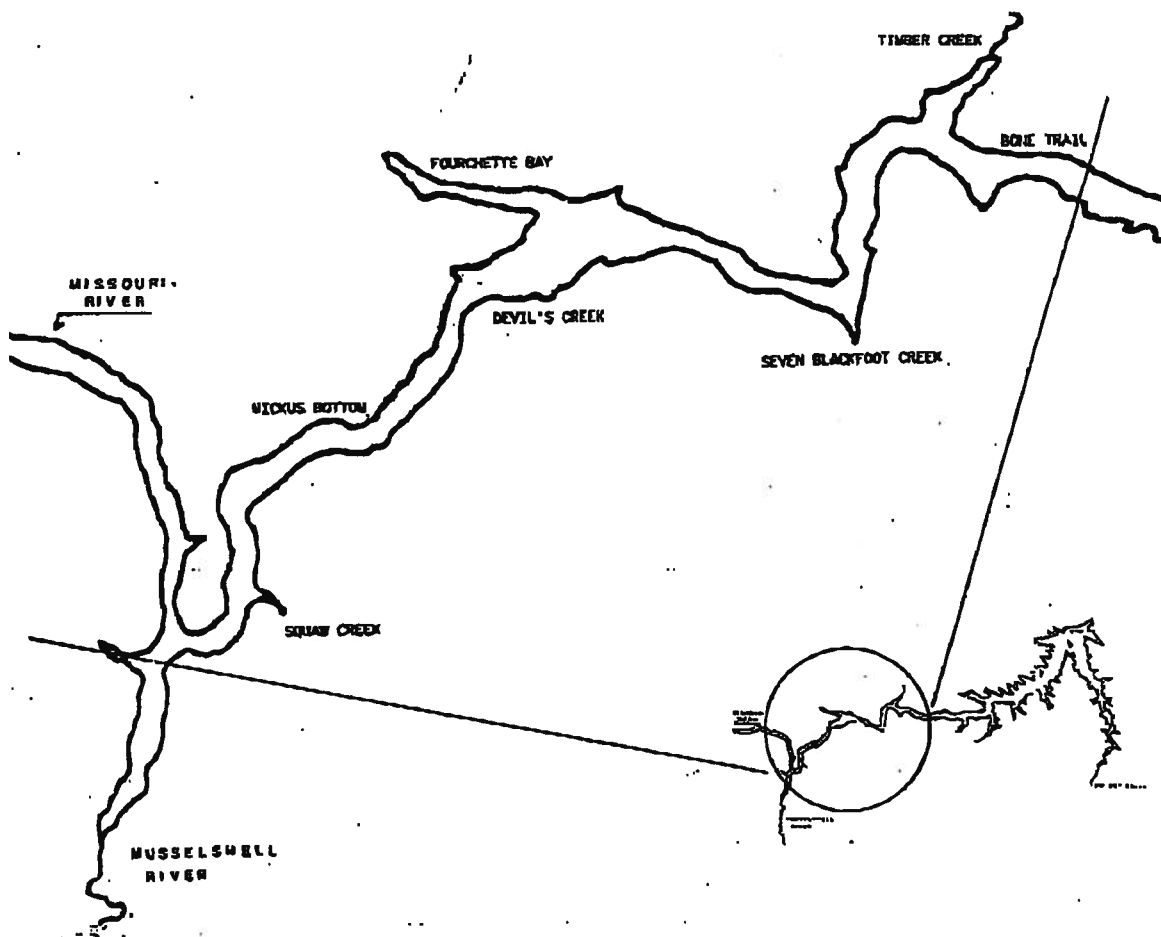


Figure 1. The study area for the 2001-2002 Juvenile paddlefish research.

Because of low water levels in the reservoir in 2001 compared with the 1998 and 1999 field seasons, the uppermost waypoint of the first transects was placed at the mouth of Musselshell river, approximately 28km down-reservoir from the uppermost transect

location in 1998, when the reservoir levels were higher (Figure 2). The furthest down-reservoir transects ended slightly above Mickus Bottom (Figure 2).

Transect counts of age-0, age-1, and older paddlefish will be conducted once a week for the duration of the 2002 field season. The boat will be driven along each transect from the upstream to downstream waypoint at 8-9 km/hr, with the aid of the GPS unit. Paddlefish will be counted on the starboard side by the driver and on the port by a crewmember. All fish seen within 10m of the starboard or port sides of the boat will be counted. Paddlefish will be divided up into three age groups: age-0, age-1, and adult based on observed length. At the end of each transect the counts will be recorded into the three different categories.

In addition to the numbers of fish, time, water depth, water temperature, Secchi depth, wave height, weather conditions will all be recorded at the upstream waypoint of each transect. Number values will be assigned to weather (0= clear, 1= partly cloudy, and 2= overcast) and wave height (calm= 0.0-0.15 m, choppy=0.16-0.42 m, rough=0.43-0.73 m, and very rough=0.74-1.0 m), if wave height exceeds 1 m, the water will be considered too rough to safely obtain accurate counts. One 45s surface zooplankton tow will be performed at the head of each transect as well. Tows will be conducted using a 80 micron mesh Wisconsin net with a 15.1 cm gape, fixed with a General Oceanics flow meter. Zooplankton samples will be placed in specimen jars labeled with date, transect, and depth of tow, and preserved in a 90% ethanol solution.

In the event that significant quantities of age-0 or age-1 paddlefish are observed during transect procedures, effort will be placed on capturing the young paddlefish. We will dip net age-0 and age-1 paddlefish in order to obtain information on length and

weight of these young fish. Dip nets with three-meter fiberglass handles and small (~1 cm) nylon mesh will be used in order to target age-0 paddlefish. One netter will stand on the platform at the bow of the boat while another netter drives the boat, netting fish from the rear starboard area of the boat. The boat speed will be the same (8-9 km/hr) as for the transect counts (Fredericks and Scarnecchia 1997). Captured fish will be weighed on a Ohaus electrical scale to the nearest 0.1 g and lengths taken on measuring boards to the nearest 0.1 cm. Length, weight, and location, from the GPS, will be taken for all individuals.

In the event that low numbers of age-0 and age-1 paddlefish are counted during transects, the same methods will be used to capture paddlefish using dip nets. However, the small nylon mesh nets currently being used for age-0 capture will be replaced by larger nylon mesh nets for easier capture of larger fish in the event that few age-0 are present. Length, weight, and location data will be recorded for captured fish.

#### *Data Analysis:*

Paddlefish densities (number/km) will be averaged for each station by the mean of the three transect. These values will be analyzed graphically for spatial trends. Analysis of Variance (ANOVA) will be used to determine whether paddlefish distribution differed significantly between sites, dates, turbidity, depth, and total zooplankton abundance. If significance is determined, the Tukey multiple pairwise comparison method will be used to determine which stations were significant.

\*I need to talk about zooplankton counts in lab.



### **Reference Cited**

Fredricks, J.P. and D.L. Scarnecchia. 1997. Use of visual counts for estimating relative abundance of age-0 paddlefish in Lake Sakakawea. North American Journal of Fisheries Management. 17: 1014-1018.

Kozfkay, J.R. 2000. Ecology of age-0 and age-1 paddlefish in Upper Fort Peck Lake, Montana. Master's thesis, University of Idaho, Moscow, ID.