



Observations on the life history, movement, and harvest of the paddlefish, *Polyodon spathula* in Montana
by John Wesley Robinson

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in Fish and Wildlife Management
Montana State University
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Abstract:

The life history, movements and harvest of the paddlefish in Montana were studied from 1963 to 1965. Specimens were secured from the Yellowstone and Missouri Rivers by snagging, seining, poisoning, and gill netting. A total of 486 specimens collected for age and growth were in the age classes 4 to 28. About 88 percent of the paddlefish collected at Intake were in age classes 7 -12 and these had an average total length of 30.4 inches and weighed 23-28 pounds. About 61 percent of those from the dredge cuts were in age classes 17 - 24 and averaged 30-7 inches and 20.83 pounds while 65 percent of the paddlefish from the-Missouri River were in age classes 19 - 23 and averaged 39-5 inches and 54.27 pounds. The - same age classes were-represented each year in each area- Females were generally older and larger than males. The - ratio of males to females was as follows: Intake (1,4-03 specimens) - 35.9:1; Dredge-cuts (75 specimens) - 2.5:1; Missouri River (37 specimens) - 1.8:1. The estimated number of eggs for 4 females ranged from 82,397 to 269,043- Egg diameters ranged from 2.35 to 2.43 millimeters. Of 1,146 paddlefish tagged at Intake, 164 were recaptured one or more times. Four of these moved about 200 -river miles downstream from' the tagging site, one moved about 100 miles upstream, and one moved about 70 miles down the Yellowstone River and 190 miles up the Missouri River. The -harvest for the Intake area was estimated at 2,562 paddlefish or 28 tons in 1964 and 1,143 paddlefish or 12 tons in 1965.

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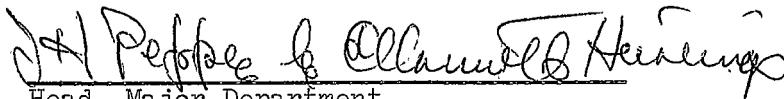
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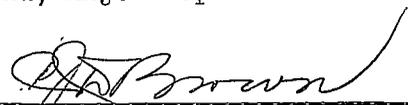
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ABSTRACT

The life history, movements and harvest of the paddlefish in Montana were studied from 1963 to 1965. Specimens were secured from the Yellowstone and Missouri Rivers by snagging, seining, poisoning, and gill netting. A total of 486 specimens collected for age and growth were in the age classes 4 to 28. About 88 percent of the paddlefish collected at Intake were in age classes 7 - 12 and these had an average total length of 50.4 inches and weighed 23.28 pounds. About 61 percent of those from the dredge cuts were in age classes 17 - 24 and averaged 50.7 inches and 20.83 pounds while 65 percent of the paddlefish from the Missouri River were in age classes 19 - 25 and averaged 59.5 inches and 54.27 pounds. The same age classes were represented each year in each area. Females were generally older and larger than males. The ratio of males to females was as follows: Intake (1,403 specimens) - 35.9:1; Dredge cuts (75 specimens) - 2.5:1; Missouri River (37 specimens) - 1.8:1. The estimated number of eggs for 4 females ranged from 82,397 to 269,043. Egg diameters ranged from 2.35 to 2.43 millimeters. Of 1,146 paddlefish tagged at Intake, 164 were recaptured one or more times. Four of these moved about 200 river miles downstream from the tagging site, one moved about 100 miles upstream, and one moved about 70 miles down the Yellowstone River and 190 miles up the Missouri River. The harvest for the Intake area was estimated at 2,562 paddlefish or 28 tons in 1964 and 1,143 paddlefish or 12 tons in 1965.

INTRODUCTION

The paddlefish is native to the Missouri and Yellowstone Rivers of Montana. The first authentic record of paddlefish for Montana was in 1946 (Brown, 1951). Since that time it has been reported on several occasions in the upper end of Fort Peck Reservoir on the Missouri River and in the dredge cuts below the dam. While unconfirmed reports of paddlefish catches exist for the Yellowstone River prior to 1961, the first large run was observed in 1962. This occurred below the Intake diversion dam. Since the paddlefish has become better known, fishing pressure has increased in several areas. In view of the increased respect given the paddlefish as a food and game fish, the Montana Legislature changed its status to a game fish effective July 1, 1965. The importance of this fish stimulated the Montana Fish and Game Department to finance the present study which concerns the life history, movement, and harvest of the paddlefish. This study extended from May 1963 to December 1965. Field collections were made during May and June of 1964 and May through August of 1965 at two locations on the Missouri River and one on the Yellowstone River (Figure 1).

Most data were collected from the area below the Intake diversion dam, which is located on the Yellowstone River 20.1 river miles downstream from Glendive, Montana. Paddlefish were concentrated there probably because of difficulty in passing over the dam. The river at this place has a mean width of about 800 feet and is very swift and turbulent (Figure 2). The bottom is composed of large boulders, rubble, and gravel

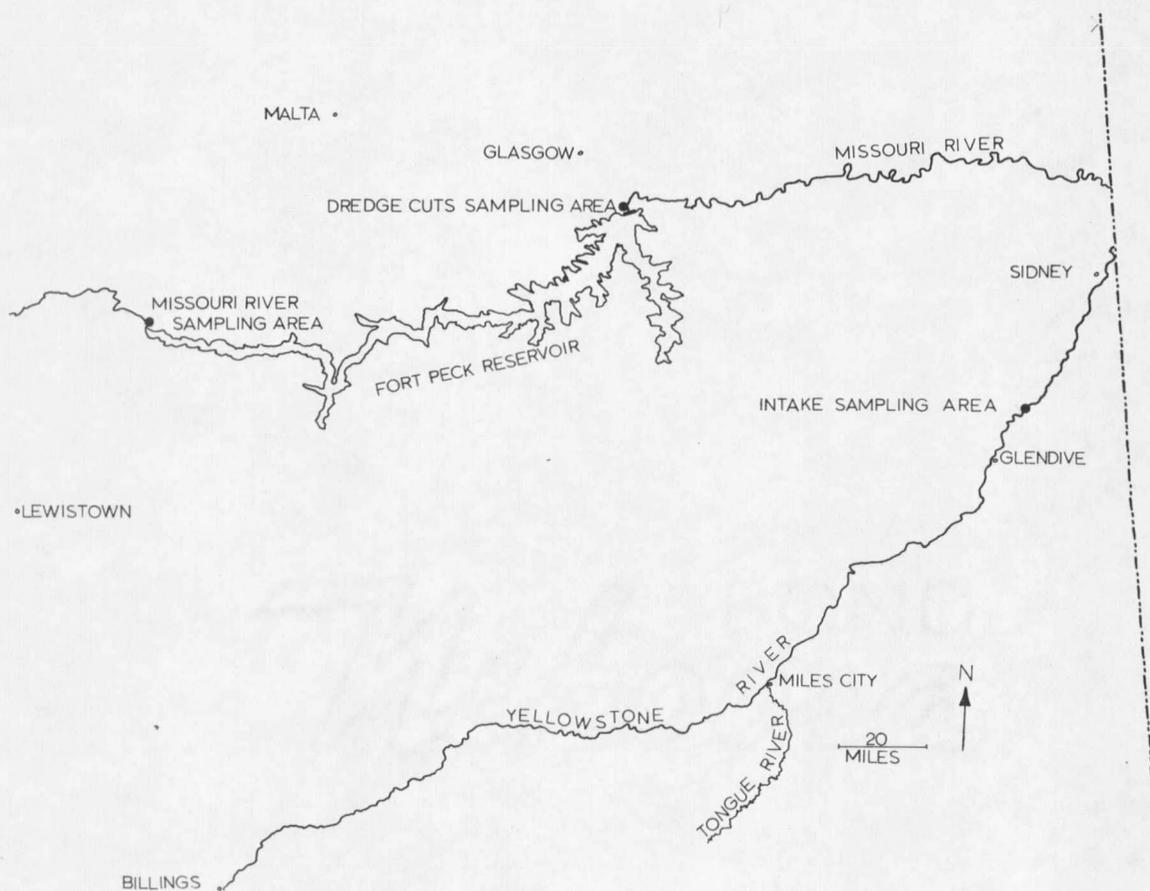


Figure 1. Map showing the study areas.

interspersed with sandy areas. Fishing is almost entirely confined to the northwest bank, since the southeast bank is inaccessible except by boat, during periods of high water.

Collections were also made from two areas of the Missouri River. One is located about 10 miles upstream from Fort Peck Reservoir and extends for about 5 miles along the northeast shore of the river. The river here has a low velocity without turbulence and has a mean width of



Figure 2. The Intake study area on the Yellowstone River. Photo by Hector LaCasse.

about 350 feet. The bottom is composed mostly of mud and silt. The other area is a dredge cut, where earth was borrowed for the construction of the dam (Figure 3). This is located about 1 mile below Fort Peck Reservoir and is more or less isolated from the Missouri River. It has an area of about 300 surface acres and a maximum depth of 22 feet. The bottom is mainly clay with some gravel areas.

