Water Security Agency

BIGMOUTH BUFFALO (*Ictiobus cyprinellus*)

Species at Risk Act Status: Special Concern

Qu'Appelle River System

The aquatic system within the Qu'Appelle River system contains the highest diversity of fish within Saskatchewan. A total of 30 large bodied and small bodied fish species live within the Qu'Appelle River System and account for approximately 45 per cent of Saskatchewan's fish diversity. Among those present is a federally protected species at risk called the Bigmouth Buffalo (*Ictiobus cyprinellus*). As a species of ***special concern***, the Bigmouth Buffalo is thought to be at risk of becoming threatened or endangered because of a loss of habitat. The federal Department of Fisheries and Oceans is currently developing a management plan for this species and Saskatchewan prohibits anglers from keeping, harming or killing the Bigmouth Buffalo and anyone capturing one while angling should release it unharmed and contact WSA with its location and date of capture.

General Description

Bigmouth Buffalo are a stout, deep-bodied fish, with large scales, slate or olive bronze dorsal surface, olive yellow sides, and yellow and white belly. Bigmouth Buffalo typically measures 25 to 50 cm in length and weigh between 2 to 5 kg, but can be in excess of 80 cm and 15 kg. Buffalo have large mouths and lack the fleshy lips common to other suckers. Although often confused with non-native common carp, Bigmouth Buffalo can be readily distinguished by the absence of whisker-like barbels surrounding the mouth.

A  B  C 

Primary color morphs of Bigmouth Buffalo in the Qu'Appelle River System (A and B). A common carp (Cyprinus carpio) is shown in C for comparison. Note the pair of barbels in the corner of the carp's mouth which are absent on the buffalo.

Habitat

Bigmouth Buffalo are restricted to the Qu'Appelle River within Saskatchewan, which represents the northwest limit of their native North American range. Bigmouth Buffalo prefer warm, turbid, highly eutrophic waters, and occupy warm shallow protected bays in the spring and summer.

Feeding and Spawning

Bigmouth Buffalo feed on plankton and on aquatic invertebrates found in the mud and debris along lake and river bottoms. Spawning occurs in late spring within tributary streams or shallow flooded lake shores and marshes when water temperatures reach approximately 18 degrees Celsius. Triggered by the onset of fresh, flowing water, females broadcast their eggs randomly over flooded vegetation within the shallows.

Left: Bigmouth Buffalo spawning in Buffalo Pound Lake.

Right: Buffalo fry circled as they emerge two weeks post spawn.

Threats to Bigmouth Buffalo

The bigmouth buffalo is listed as a regional priority for Habitat Stewardship activities in Saskatchewan. The installation of dams and other water control structures that alter the natural flow regimes and regulate lake levels is thought to have led to the elimination or severe degradation of spawning habitat potentially limiting the recovery of bigmouth buffalo in the Qu'Appelle System. As a result, water management, in response to increasing water demands for agriculture, commercial and domestic use, is perceived as one of the highest priority threats affecting the bigmouth buffalo population currently and the into the future.

Water control structures and weirs were thought to be an impediment to Bigmouth Buffalo migration decreasing their distribution and reproductive success. Recent work by the WSA demonstrates they are not. Shown is the control structure and fishway on Buffalo Pound Lake, SK.

Response by the Water Security Agency

As water managers in Saskatchewan, WSA has an interest in understanding the impact water management may have on its fisheries. Consequently, a study initiated on the Qu'Appelle River system focusing on habitat use, passage limitations, and the population health of Bigmouth Buffalo with a goal of assessing and addressing potential impacts of water management. WSA has determined that there are not barriers to fish passage at the water control structure/fishway at Buffalo Pound Lake. The Buffalo have recolonized Buffalo Pound Lake and a key spawning location within the lake has been identified. Moreover, important biological data on the timing of spawning activity and the duration of egg development have been recorded for the first time in Saskatchewan. Finally, preliminary results indicate that water management may benefit Bigmouth Buffalo by sustaining higher water levels thereby increasing spawning/rearing habitat. For more information on this study contact: Dr. Jeff Sereda, jeffrey.sereda@wsask.ca, (306) 694-8902, or Dr. Mike Pollock, michael.pollock@wsask.ca, (306) 964-1556.