Milford Reservoir
Fisheries Resource Protection
And Restoration Project

Milford Reservoir was constructed by the U.S. Army Corps of Engineers and dedicated in 1968. The 15,700 acre multi-purpose impoundment, at conservation pool, contains 163 miles of shoreline that provides a wide variety of habitats that include fertile sandy soils and sporadic rocky limestone shoreline. Since early impoundment of water, the reservoir has been managed using modern fisheries techniques to develop and maintain the sportfishery. The fishery has made Milford Reservoir an important destination for local, regional and international anglers seeking a quality angling experience. Milford Reservoir has fully developed Corps and State Parks that offers a wide variety of facilities that include camping, boat ramps, marinas, swimming beach and concessions. Total mandays of angling pressure exceeds 185,000 days and total visitation is over 2 million on an annual basis.

Problems

Milford Reservoir is aging. However, sportfish emigration into the riverine habitat below the dam is limiting the lake's full potential to meet goals associated with providing a quality sportfishery and angler days of recreation. The Milford project is designed to enhance Kansas water resources, provide support to navigational flows on the Missouri River and provide recreational opportunities. Flood control is also a prime purpose of the reservoir, which provides additional protection to the downstream Kansas River system. The rolled earthen dam lies on mile 8.3 of the Republican River and retards flows from an unregulated drainage area encompassing over 9,000 square miles in Kansas and Nebraska. Fulfilling the purposes of the project results in water release events that range from as low as 25 cubic feet per second to infrequent outflows of over 6,000 cfs.. High volume releases have proven to be detrimental to maintaining densities of several sportfishes. Species such as walleye, hybrid striped bass and white bass, white bass and blue catfish are known for the tendency to emigrate through the outlet. Studies have shown that releases in excess of 500 cfs. and resulting emigration are capable of negative impact upon species densities. The gated 21 foot horseshoe conduit through the south end of the Milford Dam is truly capable of enticing and enhancing the problematic situation.

Another problem related to predator species emigration from the impoundment is potential negative impacts upon the native minnow species residing in the riverine and stream habitats below the Milford Dam and Reservoir. Native and non-native predators released into unaltered habitats in high densities following flood events can impact small native species as predators invade their habitat. Reduction in emigration would be a benefit in lowering predation upon these species.

Proposed Actions

The project proposal is designed to minimize sportfish loss during routine and floodwater releases through the dam. Reduction in sportfish emigration would increase sportfish densities and maximize public money investment used in the completion of

fisheries management plans. The Milford tower and conduit are situated at the very south end of the dam. This factor will hasten construction and alleviate use of excessive equipment. This smaller corner lends itself to developing a barrier to fish movement. The location is also close to necessary utilities needed to develop and operate the following equipment.

Proposed plans call for the installation and operation of two devices to deter fishes from the area in front of the conduit through the Milford Dam. The first of the device uses acoustics or sonar that is capable of emitting frequencies ranging from 10 hertz to 125 kilo-hertz. Frequencies are produced from on-shore equipment and emitted through transducers located underwater. Transducers would be placed in an array in front of reservoir tower and conduit. Emitted frequencies have proven to be effective in removing the herring family species from the area. In essence, removing the primary forage base from the area and would deter predator movement in the area.

The second form of technology will be the installation and operation of aeration equipment. Compressed air produced from on-shore equipment will be delivered underwater to a location that will encircle the front of the reservoir tower. Compressed air will be delivered via perforated plumbing and form a visible curtain of air bubbles. Rising air bubbles will inhibit fish movement due to water disturbance and additional acoustics in the water. The combination of the acoustic sonar device to deter the source of fish forage and the compressed air curtain to deter movement of fishes in the area should result in multiple benefits to the aquatic resource.

Expected Outcomes

In essence, the 2 proposed actions have been utilized in the past using one of the following methods. We are proposing a 2 pronged approach to the problem of species emigration. Success in this venture could produce high-end results. Abundant and healthy sportfish populations would draw not only additional anglers, but additional visitors associated with the angling public. These would include campers, boating activity, swimmers and business for associated reservoir vendors. Good fishing and additional visitation have always been hand in hand.

Estimated Costs

It is estimated that $ 515,000 would be needed to install, operate and evaluate the project over a 5 year period as follows:

- Purchase, install and operate a Startle Fish Acoustic system. - $ 100,000
- Purchase, install and operate a Compressed Air System – $250,000
- Evaluation of the project to include: Creel Census, sampling of the fishery above and below the dam.
  Creel Census costs $ 30,000 per year, first, third and fifth year. Totals $90,000
  Sampling efforts 15,000 per year – Total $ 75,000