EA- 99-060

Montana Fish, Wildlife and Parks

DRAFT ENVIRONMENTAL REVIEW OF FISH INTRODUCTION
INTRODUCTION OF LARGEMOUTH BASS INTO EAST FORK RESERVOIR

Proposed Action:

To stock largemouth bass *Micropterus salmoides* into East Fork Reservoir.

Need for Action:

The intent of the stocking change is to diversify the fishery in East Fork Reservoir and increase predation on yellow perch.

Description of water body:

Name:	East Fork Reservoir	Location:	T14N R19E S14
Water Code:	16-4950	County:	Fergus

This on-stream storage reservoir was constructed in the mid 1970's on East Fork Big Spring Creek for flood retention and recreation. It is about 119 surface acres, has a storage pool of about 1100 acre-feet and has about a 35 foot maximum depth. Mean outflow from the reservoir was 28.8 cfs from the period of record of 1975 – 1985 (Natural Resource and Conservation Service data). Mean retention time is about 22 days. The flow-through reservoir has surface water outflow. The outflow pipe at the bottom of the reservoir has not worked for years, but the city of Lewistown is working to repair the structure.

Drainage where pond is located:

East Fork Reservoir is located near Lewistown, MT in the Judith River drainage, approximately 10 miles south of Lewistown, MT. The reservoir is located on East Fork of Big Spring Creek about 9 miles upstream from Big Spring Creek in the Judith River drainage.

Species proposed for introduction and stocking history:

Largemouth bass are proposed for introduction into East Fork Reservoir. Rainbow trout *Oncorhynchus mykiss* were stocked from 1976 – 1987 and brown trout *Salmo trutta* in 1981 and from 1988 – 1994. Rainbow trout initially showed good survival but did not grow well in the reservoir (Hill et al. 1990, Liknes et al. 1991). Trout stocking was discontinued in 1994 due to poor catch and growth rates. East Fork Reservoir has been the focus of numerous illegal introductions. In 1988, Montana Fish, Wildlife and Parks (MFWP) captured three northern pike *Esox lucius* and one yellow perch *Perca flavescens* during routine fall gill netting (Hill et al. 1990). In 1990, a largemouth bass was reported by an angler (Liknes et al.1991) and in 2003 one bluegill *Lepomis macrochirus* was found during MFWP trapping surveys (Tews 2004). Bluegill have since been captured annually at low levels during MFWP trapping. Largemouth bass have not been captured during MFWP surveys. Since the early 1990s, yellow perch and northern pike have been the primary game species in the reservoir (Hill et al. 1995). White suckers *Catostomus commersoni* and longnose suckers *Catostomus catostomus* are native to the area and found in the reservoir. The reservoir has not been chemically treated to remove northern pike and yellow perch since there have not appeared to be problems with these species migrating into Big Spring Creek and since it would be difficult and expensive.

Is this species legally present in the drainage?

Yes. In the Big Spring Creek drainage largemouth bass have been stocked in Lower Carter pond but are no longer present due to winter kill.

Species of Special Concern in the drainage

Westslope cutthroat trout *Oncorhynchus clarki lewisi* have been sampled during MFWP surveys in the headwaters of the East Fork of Big Spring Creek. However there are several miles of dry stream channel between the reservoir and the cutthroat trout. Sauger and blue sucker are found in the Judith River. Pallid sturgeon, and several other species of concern are found in the Missouri River approximately 95 miles downstream from East Fork Reservoir.

RISKS:

Potential for impacts on genetic structure of existing fish populations:

_X_None __ Minor __ Major

No significant impacts are expected. It is unlikely that the introduced largemouth bass would interact with any other largemouth bass. Largemouth bass are not native to Montana, and breeding with existing wild largemouth bass populations is not a concern.

Impacts to any life stage of existing fish populations due to competition and/or predation?

__None __X Minor __ Major

Predation will occur on existing populations of fish, especially yellow perch in the reservoir. Yellow perch are a common diet item for largemouth bass (Soupir et al. 2000, Liao et al. 2004). Despite northern pike in the reservoir, yellow perch are abundant. Over 90% of the yellow perch are less than 8 inches long. A potential benefit of stocking largemouth bass is predation on the yellow perch resulting in an increase in average size.

It is unlikely that largemouth bass would have impacts on fish upstream of East Fork Spring Reservoir or in Big Spring Creek. Beaver dams, water temperature and low summer flows would likely limit upstream migration. It is possible that reservoir discharge may result in many largemouth bass going downstream. Maceina and Bettoli (1998) found that longer retention time was positively related with largemouth bass year class strength and discharge negatively related to largemouth bass year class strength. However, the reservoirs in that study were much larger and with one exception had shorter retention times than East Fork Reservoir. Furthermore, Big Spring Creek has cold fast flowing water that is not largemouth bass habitat. It is an excellent trout stream with high numbers of rainbow trout and brown trout. Temperatures are cold for largemouth bass. Maximum temperatures do not reach 65° F in the upper reaches and average temperatures rarely exceed 65° F in the lower reaches. East Fork Big Spring Creek downstream of the reservoir may provide limited habitat for largemouth bass in beaver ponds where they would prey on the existing community of rainbow trout, brown trout, white sucker and longnose suckers. However low summer flow and high spring run-off would likely prevent population level effects.

Bait use by anglers can lead to illegal introductions of different species. Illegal use of live bait in East Fork Reservoir will likely not increase if largemouth bass are introduced since it is currently a warm water fishery.

Impacts to other forms of aquatic life that may be caused by this introduction?

__ None _X_ Minor __ Major

Northern crayfish *Orconectes virilis* were apparently introduced around 1996 with populations peaking at 250 per net in 2002 (Lewistown area MFWP data files). Crayfish should supply a good food source for the largemouth bass since they have been a common diet item in many studies (Soupir et al. 2000, Liao et al. 2004). Other aquatic invertebrates and amphibians will be consumed, but no population level impact is expected.

Potential for the proposed new species to reproduce in this location:

__ None _X_ Minor __ Major

It is likely that largemouth bass will reproduce in this location since water levels do not fluctuate. They can spawn on soft muddy substrate and emergent vegetation (Scott and Crossman 1978). Largemouth bass spawn above 60° F. The temperature regime in East Fork Reservoir has not been well monitored. But surface water temperatures are typically around 70° in early August and 60° in September. It is likely that predation and reservoir turnover time will limit successful spawning and recruitment of largemouth bass. Largemouth bass may need to be stocked annually to establish and maintain a fishery in East Fork Reservoir. Furthermore, since a largemouth bass was angled in 1990 (Liknes et al.1991) it appears that largemouth bass were illegally stocked but were not able to successfully populate the reservoir by natural reproduction when stocked at low levels.

If necessary, would it be feasible to remove this species after it has been stocked?

It would be difficult to remove this species once it is stocked. This reservoir is over 1000 acre-feet at full pool so would be expensive to chemically treat. Currently the draw down structure does not work. Cessation of stocking would likely reduce the population over a period of several years as stocked fish die-off or are harvested. Adult largemouth bass and northern pike will consume small largemouth bass. In northern Minnesota, largemouth bass numbers were less in lakes containing northern pike (Soupir et al. 2000) and the authors postulated that largemouth bass might be at a significant disadvantage when coexisting with northern pike. Therefore it seems unlikely that largemouth bass will become a problem fish in the reservoir.

Would this introduction result in impacts that are individually limited, but cumulatively considerable? No.

Describe reasonable and prudent alternatives to this action, if any (including no action).

1) **No Action:** The fishery at East Fork Reservoir would continue to rely on northern pike and small yellow perch.

2) **Preferred alternative is to stock largemouth bass**. There have been several requests to establish a largemouth bass fishery in East Fork. This would diversify the fishery and perhaps increase the size of yellow perch. It seems likely that the largemouth bass success in the fishery may be limited due to the common northern pike and high reservoir turn-over. However, the reservoir provides excellent cover and yellow perch are numerous so largemouth bass may do well.

3) **Stock walleye:** The size of East Fork Reservoir, the surface withdrawal (Colby et al. 1979) and storage ratio all indicate that walleye are not a good choice for East Fork Reservoir. The NRCS monitored flows at East Fork dam from 1975 – 1985 and mean annual flow was 28.8 cfs. East

Fork at base elevation is about 1100 acre-feet, which means the storage ratio is about 0.05. Willis and Stephen (1987) found that walleye did better in reservoirs with storage ratios of 1.0 or greater. The system spills from the surface, which would likely result in high walleye losses downstream. Walleye are legally present in the drainage and are stocked annually in 16 acre Big Casino Creek Reservoir. Big Casino Creek Reservoir has a very short retention time and during high flow years there are indications that many walleye get swept downstream into Big Spring Creek and beyond. They are occasionally captured during summer electrofishing surveys in Big Spring Creek. One walleye tagged at Big Casino, traveled 165 miles down the Judith River and up the Missouri River to Loma, Montana. If walleye were stocked in East Fork Reservoir, they would be from Fort Peck stock. There are concerns regarding the genetics of the native sauger in the Judith and Missouri Rivers and hybridization with walleye. This would potentially be an additional source of hybridization, especially for the Judith River. However, several hundred times more walleye are stocked annually in Fort Peck Reservoir than would be stocked at both Big Casino and East Fork. The East Fork Reservoir dam-face is composed of rock, a substrate beneficial to walleye spawning, so it is possible some successful spawning would occur.

4) **Stock smallmouth bass:** Smallmouth bass typically like cooler, rockier and more riverine conditions than largemouth bass (Scott and Crossman 1978). Smallmouth live in warmer temperatures than are found in upper Big Spring Creek but Lower Spring Creek might have temperature (McNeill 1995) and habitat conditions suitable for smallmouth. Though it is not clear if smallmouth will adversely impact salmonids there are cases where salmonid populations have declined after smallmouth were introduced (McNeill 1995). Since Big Spring Creek is the best trout stream in the Lewistown vicinity it is not acceptable to stock any species that would have any possibility of impacting the trout fishery. Therefore this is not an acceptable preferred alternative.

5) **Return to trout management:** Trout did poorly in the past when stocked in the reservoir and would not survive well with the existing predator fish. It would be very expensive and difficult to remove the illegally stocked northern pike and walleye from East Fork Reservoir. Even if northern pike and yellow perch were removed from East Fork Reservoir it is likely that trout would continue to perform poorly unless suckers were removed from the headwaters. Anglers appear to prefer the existing fishery to the previous trout fishery. Fishing pressure in the 2000's has been about 3 times higher than it was in the 1980's and 1990's (MFWP MFISH data base 2006).

Describe and evaluate mitigation, stipulations, or other control measures enforceable by the agency, if any.

None are necessary beyond this EA.

List any other agencies or individuals that may be affected by the proposed introduction:

Montana anglers

List all agencies and individuals who have been notified of this proposed introduction: Public notification via the State of Montana web site (http://fwp.mt.gov/publicnotices/).

Steve Leathe, Fisheries Manager, Montana Fish, Wildlife and Parks, Great Falls

Is an EIS required? No the action is expected to be minor and beneficial.

EA prepared by:	Anne Tews, Fisheries Biologist
Date:	November 30, 2006
Comments will be accepted until:	January 12, 2007
Comments should be sent to:	Anne Tews Montana Fish, Wildlife and Parks P.O. Box 938 Lewistown, MT 59457 antews@mt.gov

References

Colby, P. J., R. E. McNicol and R.A. Ryder. 1979. Synopsis of biological data on the walleye. Contribution No. 77-13 of the Ontario Ministry of Natural Resources, Fisheries Research Section, Maple Ontario. Food and Agriculture Organization of the United Nations.

Hill, W.J, G. A. Liknes, A. Tews and P.D. Hamlin. 1995. Statewide fisheries investigations. Northcentral Montana Warm and Coolwater Ecosystems. July 1, 1994 – June 30, 1990. Montana Fish, Wildlife and Parks. Job Progress Report.

Hill, W.J. G. A. Liknes and S. A. Leathe. 1990. Statewide fisheries investigations. Northcentral Montana Coldwater Lakes Investigations. July 1, 1989 – June 30, 1990. Montana Fish, Wildlife and Parks. Job Progress Report.

Liao, H., C. L. Pierce and J. G. Larscheid. 2004. Consumption dynamics of the adult piscivorous fish community in Spirit Lake, Iowa. North American Journal of Fisheries Management 24: 890 – 902.

Liknes, G. A., W. J. Hill, A.Tews and S. A. Leathe. 1991. Statewide fisheries investigations. Northcentral Montana Coldwater Lakes Investigations. July 1, 1990 – June 30, 1991. Montana Fish, Wildlife and Parks. Job Progress Report.

McNeill, A. 1995. An Overview of the smallmouth bass in Nova Scotia. North American Journal of Fisheries Management. 15: 680-687.

Maceina, M. J. and P. W. Bettoli. 1998. Variation in largemouth bass recruitment in four mainstream impoundments of the Tennessee River. North American Journal of Fisheries Management 18:998-1003.

Montana Fish, Wildlife and Parks 2006. From Montana Fisheries Information System database. November 21, 2006. http://maps2.nris.state.mt.us/scripts/esrimap.dll?name=MFISH&Cmd=INST

Scott, W. B. and E. J. Crossman. 1973. Freshwater fishes of Canada. Bulletin 184. Fisheries Research Board of Canada.

Soupir, C. A., M. L. Brown and L.W. Kallemeyn. 2000. Trophic ecology of largemouth bass and northern pike in allopatric and sympatric assemblages in northern boreal lakes. Canadian Journal of Zoology. 78: 1759 – 1766.

Tews, A.E. 2004. Lewistown area fisheries management. Montana Statewide fisheries management, 2003report. Montana, Department of Fish, Wildlife and Parks. Job Progress Report.

Willis, D.W. and J. L. Stephen. 1987. Relationships between storage ratio and population density, natural recruitment, and stocking success of walleye in Kansas reservoirs. North American Journal of Fisheries Management 7:279-282.