

## **EFFECTS OF ROAD CULVERTS ON EASTERN MONTANA PRAIRIE FISH ASSEMBLAGES: INITIAL RESULTS**

Leo Rosenthal and Thomas McMahon, 310 Lewis Hall, Montana State University,  
Bozeman, MT 59717, lrosenthal@montana.edu

Joel Cahoon, joelc@ce.montana.edu

Matt Blank, mblank@coe.montana.edu

Road culverts can serve as obstacles to fish migrating between seasonal habitats. Development of new roads, as well as repair and upgrade of existing roads has led to research addressing the effects culverts have on fish populations. Much of this research has focused on salmonid species in mountain stream systems, but the total effect road culverts have on species continuity in small, prairie streams remains largely unknown. Because many of the diverse number of fish species found in prairie streams are small bodied, and likely poor swimmers, culverts may act as significant barriers to passage via high outlet drops, high water velocities, and insufficient water depth. Fish passage on several tributaries of the Yellowstone River with a variety of culvert crossings were examined in this study. Passage abilities of prairie fish species were assessed indirectly using software models and directly through the use of mark-recapture experiments. In the first year of this study, we observed diverse fish assemblages with little difference in species composition above and below the culvert crossings studied. Upstream movement through natural reaches as well as culverts was documented for six species of fish. The goal of the study was to identify culvert characteristics that restrict fish passage during the range of flow conditions present in prairie streams from spring to fall and identify species that may be particularly sensitive to fish passage restriction.