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A GPS model for assessing threats to cavefish sites

There are currently two species of cavefish in Missouri, the Southern Cavefish, Typhlichthys subterraneus, and the Ozark Cavefish, Amblyopsis rosae. Both have experienced declines in recent years. The Ozark Cavefish is listed as “endangered” by the Department of Conservation and “threatened” by the U.S. Fish and Wildlife Service. The Southern Cavefish is not listed by either of these groups but if things don’t improve, we may see them listed soon. Both live in caves or other underground habitat, and are well adapted to that habitat. Their decline is believed to be caused by destruction of habitat and the introduction of pollutants into the water table. Due to the karst nature of these habitats the actual environment many of these fish live are inaccessible to researchers. In this study GIS is used to identify possible threats to these fish communities. After collecting these data layers it became evident at how large the gaps in the information about subsurface water flow are. Contradictions in the data sets show that more information is needed and that this data should be more detailed then it has been in the passed. A model of threats to known cavefish locations was created. With this model cavefish sites with the least number of threats can be identified for possible protection. Because the model is only as effective as the data that are put into it more detailed information about cavefish recharge areas during different flows and more detailed information about possible threats as more detailed information becomes available, this model can be updated and better projections made.