The ecology and underlying physiology of embryonic dormancy in annual killifishes

Annual killifishes have evolved a complex life history that includes three distinct stages of embryonic diapause. This level of developmental complexity is rare among animals. Most of the information that we know about diapause in these species has been accomplished through laboratory studies. Recently we have been using field ecology techniques to explore the relationship between each stage of diapause and the developmental environment experienced by annual killifishes. Our field and laboratory studies suggest that each stage of diapause has evolved to deal with different ecological and environmental aspects of the ephemeral pond environment. It appears that these species have evolved a complex life history with some diapause stages aligning the development of the species to environmental cues while other diapause stages may allow for reproductive bet-hedging.