

## **WETLAND PULSE AMPLITUDE BETTER PREDICTS AQUATIC SPECIES RICHNESS THAN STATIC WETLAND SIZE**

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Pond drying is known to play an important role in the structure of aquatic faunal assemblages by filtering species by aquatic larval development time and via the identity of top predators. However, the effects of seasonal habitat size fluctuations are not well studied. Pond size and other hydrological parameters can be difficult to estimate in the field and are frequently limited to rough size estimates, an average hydroperiod value, or a relative categorical assignment (i.e., large vs. small, short vs. long). As such, few studies have quantitatively investigated the role of seasonal habitat expansion on wetland community structure in natural settings. In this study we examine a series of naturally occurring fishless ponds across a size and permanence gradient to assess the importance of hydrological expansion on aquatic faunal diversity. We measured the extent of the shift in the aquatic terrestrial transition zone throughout the year by mapping pond perimeters, thus quantifying the area of periodically flooded riparian zones. Aquatic fauna (insects, larval anurans, and decapods) were surveyed by dipnet and identified to species. Relative primary productivity was estimated using periphyton accumulation rates. We then modeled species richness using a suite of limnological parameters, including aquatic pulse amplitude. We found evidence for the importance of wetland pulse processes in maintaining biodiversity. When the variable measuring aquatic habitat amplitude was incorporated into the base model it replaced median wetland size as a predictor of species richness. This could be reflective of the importance of bottom-up nutrient cycling mechanisms to promoting faunal diversity in wetlands when major predators are removed. This conclusion is supported by the fact that our data also illustrate that primary productivity, as measured by periphyton accumulation rates, was predicted by our wetland area, amplitude, and depth variables.

**PRESENTER BIO:** Sergio C. Gonzalez is an ecologist and pilot with over 10 years of professional experience in wildlife and habitat management, landscape ecology, amphibian ecology, wetland ecology, and invasive species management. He also specializes in aerial logistics, aerial survey techniques, vegetation mapping, and unmanned aerial systems.