

David A. Schumann, david.schumann@msstate.edu

A Bayesian belief network to estimate conservation need for understudied aquatic taxa

David A. Schumann and Michael E. Colvin

Mississippi State University, Department of Wildlife, Fisheries, and Aquaculture, Mississippi State, MS 39762

The allocation of limited resources requires the prioritization of species for management. Endangered species legislation extends to relatively few species and generally excludes poorly known and understudied taxa of potential conservation significance. By synthesizing similar biological criteria and threats, conservation-prioritization frameworks attempt to identify taxon at greatest extinction risk and prioritize management actions. Variations of these assessments are widely accepted throughout the world and used to inform policy. However, the available assessment tools are severely constrained by uncertainty and difficult to apply to aquatic species that typically lack the necessary data (e.g. ~46% of Chondrichthyes are “data deficient”). We developed a repeatable, biologically-based process to transparently identify taxa in need of conservation attention that is consistent with the conservation biology principles of redundancy, resiliency, and representation. Our model can include the informed consensus of experts and uncertainty in the absence of quantitative data and provide robust risk assessments for those potentially rare but understudied taxa. We demonstrate the utility of this model using Piebald Madtom *Noturus gladiator*, a species currently under federal review. This model is broadly applicable to aquatic taxa worldwide and will be particularly useful when applied to highly diverse regions with many poorly known species.