Abstract

Citizen science is growing in importance for ecosystem management and long-term monitoring. A large marine citizen science project operated by the Reef Environmental Education Foundation collects data as categorical species abundance across a number of otherwise understudied reefs. This format is difficult interpret and integrate with traditional numeric data. However, this study introduces a set of models that were capable of interpolating between categories after they are converted to a numeric. Critically, these models can 1) reproduce simple patterns in simulated data with minimal bias and 2) make reasonable predictions when cross validated. This technique allows REEF data to be used to model species abundance, and not just presence absence as it has in the past. With these methods, the queen triggerfish(*Balistes vetula)* population sampled was found to have statistically significant decreasing population in the region, with implications for conservation and fisheries management.