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Hypothesis

Genetic diversity, especially in marine species, could be the result of various factors. From latitude/longitude to body length to reproduction strategies could cause either large or small genetic diversity in thousands of species. Despite the multitude of factors that could affect an outcome, the four factors that I want to focus on are body length, fertilization, reproduction mode, and fecundity of the species.

I am predicting that as body length increases, genetic diversity decreases. There seems to be a negative relationship between that two that studies have acknowledged as well (McCusker & Betzen, 2010). This relationship leads to the overarching idea of reproduction strategies in general. Body sizes are known to have an effect on population size/fecundity as well. The pattern seen is large species have a much lower number of offspring compared to smaller species. One explanation is with survival, one that ties in with the idea of r- vs. k-strategies. Smaller species tend to have much more offspring because of possible mortality rates, either due to predation or harsh environments (Winemiller & Rose 1993).

Fertilization and reproduction also have a close relationship, with each other, as well as body length and fecundity. I predict that the external fertilization method would yield higher genetic diversity. Because fertilization ties in with body length and fecundity, there is a higher fecundity with external fertilization opposed to internal fertilization. I also predict that species with the reproduction mode of protogyny, protandry, or true hermaphroditism would also result in more genetic diversity.

However, these results may vary due to the molecular markers that were used, microsatellites and mitochondrial DNA. Fecundity may not affect genetic diversity (Bazin, Glémin, & Galtier, 2006). Because of these, possible other factors may not also reflect more genetic diversity, such as fertilization strategies.