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Reading #1

How many species concepts are there?

Author: John Wilkins

Summary:This article attempts to address the question of how humans classify or define a species. The author presents 7 concepts that he finds the most important: agamospecies, biospecies, ecospecies, evolutionary species, genetic species, and taxonomic species. A few of these concepts are related to how we identify a species by morphology, instead of presenting a specific definition. The author doesn’t employ any particular research methods but he seeks to develop a definition or bring a resolution to the problem in biology of having many concepts of what makes a species. His major conclusions are that there is only one “concept” of a species and that the other definitions developed by other people are “conceptions” of the one concept. He also argues that there are two main mechanisms that control speciation: “reproductive reach”, which is the physical ability of a species to mix its gene pool, and ecological niche adaptation which occurs when an organism is asexual or can’t rely on reproductive reach.

What I liked about this paper:

I liked that it brought up the concept of philosophy in science. This is something that I had never seen applied in geology before and I think it’s very interesting because I’ve always thought of geology as a more practical subject and it seems that philosophical applications couldn’t be further from that. I liked that very specific definitions were given because I also hadn’t known about these before; for example paragraph three defines a gene pool as the population of genomes that can be exchanged, and an evolutionary species as what happens when processes occur to make a species distinct. I also enjoyed learning about how important sex and ecology are in helping to define a species and the author gives the example that agamospecies lack sex and so the only thing that can sustain it is ecological niche adaptation. I also thought that the example of ligers and tiglons was very important because, as the author points out, even though lions and tigers are capable of interbreeding it is not the norm because in nature they are found in very different habitats and may not even come across each other. In addition their anatomy is different which may make it more unlikely that they mate. I had always been taught that what defines a species is whether two organisms can produce viable offspring and I see from a Google search that female tigons and ligers are fertile while the males are sterile. Do both male and female need to be fertile to define a species?

What I didn’t like about this paper:

Even though I like that it spoke about philosophy and the definitions of “species” according to different people, I wonder how important this really is overall. The article says that humans have been defining species since the 15th century where the simple definition was that a species produced others that looked like it. It went on to talk about “concept” versus “conceptions” and says that there is only one “concept” and all other definitions simply “conceptions”. This is just my opinion and it will probably change during the course of this class, but the discussion in this article struck me as being inconsequential and made me wonder how necessary it is or how impactful is its contribution to the study of paleobiology.