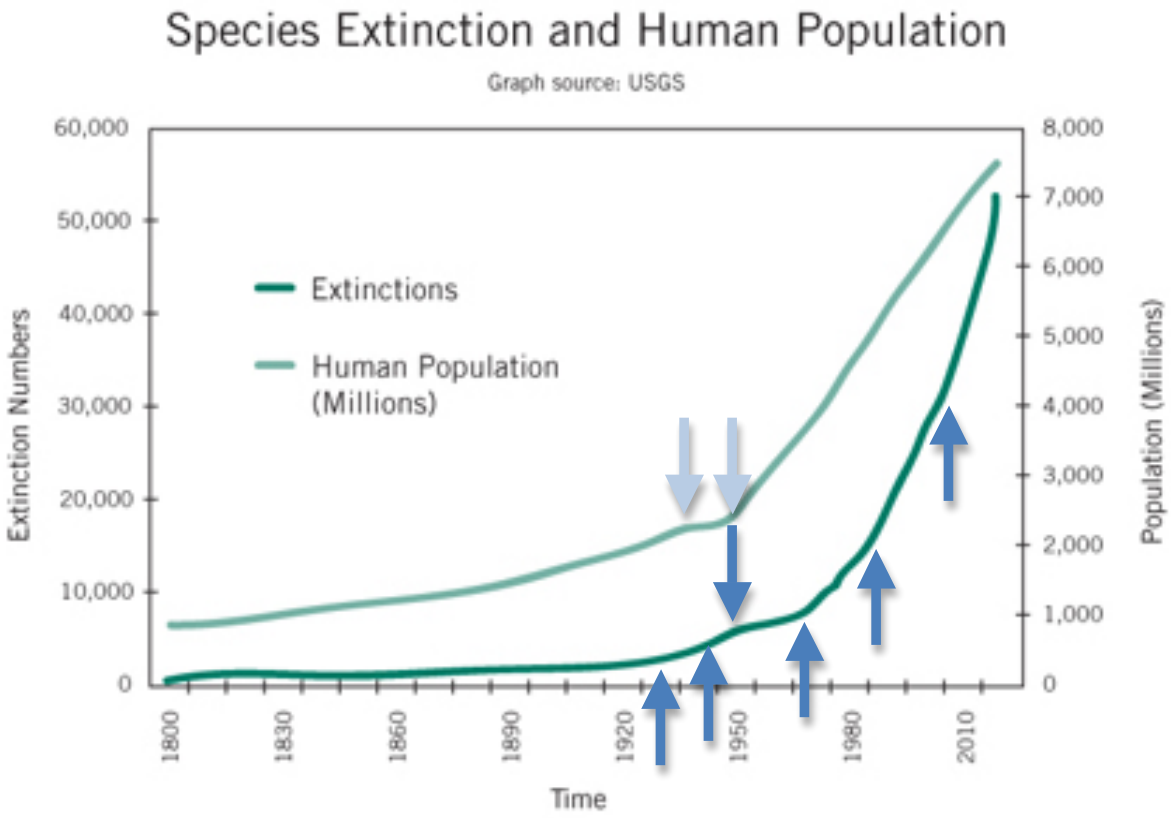


The Center for Biological Diversity is making disturbing claims about the relationship of human population growth to species extinction rates and also to climate change.

According to this graph, they attempt to make the claim that increases in population growth have led to increases in species extinctions since the 1800s.

In high school and college calculus mathematics courses, you learn that more than the actual number of any phenomenon, it is often, when looking for causality, important to actually look at key points where the slope of the graph is changing – to look at the rate of the phenomenon, as well as the *changes* in the rate, or slope, of a graph. The idea is to look at points in time where things are accelerating or decelerating and look for system drivers at those points.

If we look at this graph, you actually see the following trends:

1. Although the rate of population of human beings was increasing since the 1800s, the rates of species extinctions are not significantly changing until somewhere between 1920 and 1930.
2. Somewhere between 1930 and 1940 the species extinction curve starts to trend upward. What's going on in that time globally? The end of the Great Depression, the massive expansion in land use for agroindustrial uses, and the expansion of the use of buses and privately owned cars, as well as exploration and drilling for oil.
3. The species extinction rate starts to increase during WWII.
4. The species extinction rate starts to decrease right at the end of WWII.

5. The human population growth rate slows during WWII.
6. By 1950 the human population growth rate is increasing again.
7. Around the beginning of the 1970s, the species extinction rate starts to pick up. This is the era, in international development, of the "Green Revolution" and of large industrial infrastructure projects – roads, dams, and the like.
8. In the beginning of the 1990s, we enacted NAFTA, and this is the place where the extinction rate kicks up again.
9. There is a slight, final kick up in the rate of extinctions in the late 2000s.

Now, I assigned the arrows to the graph based on the rates of change in the graph, before I knew what the related dates were.

When I look at the points where the arrows identify conjunctures, correlated with my study of international development and world history, you find that perhaps that changes in species extinctions rates are more related to changes in resource use patterns, in particular of extensive land uses, including industrial agriculture and oil, coal and other fossil fuel exploration, extraction, and development, are more correlated to changes in the rates of species extinctions, than to human rates of population growth, or changes therein.