**Whiplash Weather and Phenotypic Plasticity Reading Guide**

*Read* [*More evidence that global warming is intensifying extreme weather*, John Abraham, The Guardian, July 2015](https://www.theguardian.com/environment/climate-consensus-97-per-cent/2015/jul/01/more-evidence-that-global-warming-is-intensifying-extreme-weather), https://www.theguardian.com/environment/climate-consensus-97-per-cent/2015/jul/01/more-evidence-that-global-warming-is-intensifying-extreme-weather. *Answer the following questions.*

1. How does global warming lead to extreme weather events?
2. Define “whiplash weather.” In your own words explain what it means that the trends relating climate change to severe weather the scientists write about in their paper are “statistically significant.”
3. People who don’t understand climate change sometimes point ot extreme slow conditions such as the polar vortex as evidence that global warming is a myth. After reading this article how would you respond to a person who says global warming is not occurring?

*If directed by your teacher, read* [*Evolutionary Response to Rapid Climate Change*, Bradshaw & Holzapfel, Science 2006](https://bradshaw-holzapfel-lab.uoregon.edu/PDF/B%26H06sci.pdf), https://bradshaw-holzapfel-lab.uoregon.edu/PDF/B&H06sci.pdf. *Answer the following questions.*

1. Differentiate between genotype and phenotype.
2. In your own words define “phenotypic plasticity” and list 3 examples of phenotypic plasticity in response to changes in climate.
3. List 3 species in which genetic changes have been observed in response to climate change.
4. Explain why the authors write that genetic changes in the observed species are the result of clue that correspond to seasonality, rather than to hotter temperatures alone.
5. Define the term “dormancy.” (You may need to look this up if you don’t know.)
6. Global warming is proceeding faster in (northern/tropical) latitudes *(circle one)*.
7. How has this shift affected insects at the latitudes where global warming is occurring more rapidly?