**Zoogeography Assignment 3 Due Fri, Feb 7th**

Fennessy, J., Bidon, T., Reuss, F., Kumar, V., Elkan, P., Nilsson, M.A., Vamberger, M., Fritz, U., and A. Janke (2016) Multi-locus analyses reveal four giraffe species instead of one. *Current Biology* 26: 1-7.

**Instructions:**

* Use your **own words** and provide complete but **concise** answers to the following questions.
* Cite literature appropriately if referenced.
* Hard copy to be handed in by 12:00pm, Monday, Feb 3rd in class or at Biodiversity Research Centre Rm 325.   
  No exceptions unless previously arranged with the TA.

1) What is the “species concept” used by the authors in this paper, and what is a “species” according to this concept?

2) This paper proposes that giraffes consist of multiple distinct genetic groups, instead of only one, and supports this idea using nuclear and mitochondrial DNA. How does the evolutionary tree generated using nuclear genes differ from the tree based on mtDNA?

3) If four species of giraffes (instead of one) are formally recognized, what immediate conservation action should be employed for these animals? (limit your answer to 4 sentences)

4) After reading Jerry Coyne’s blog post, summarize the main argument(s) against the proposal to divide Giraffes into four species. Why couldn't these distinct groups be recognized as species under the Biological Species Concept?

5) Using GBIF and RStudio Cloud, create your own distribution map of the four Giraffa species as defined by Fennessey et al (2016). Compare the distributions of *Giraffa giraffa* between maps – in what ways are they different and why? Refer to Figure 2a,2b to answer your question.