

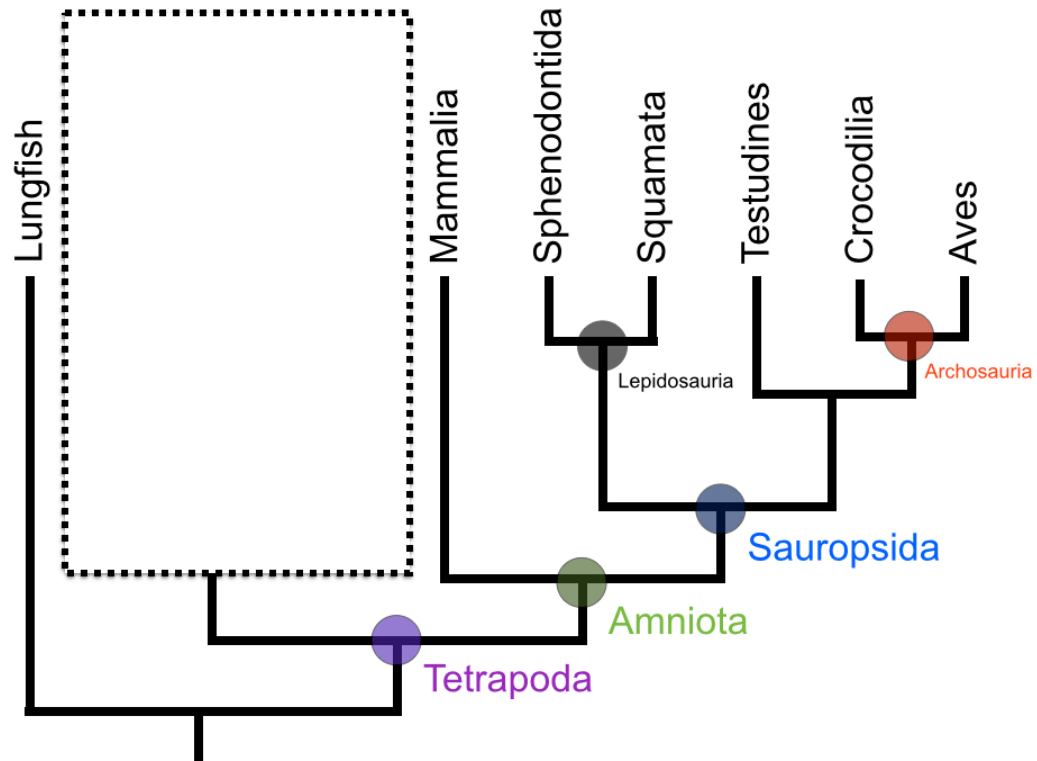
Name: \_\_\_\_\_

Herpetology  
Fall 2014  
Exam 1

Question	Points	Score
1	20	_____
2	20	_____
3	20	_____
4	20	_____
5	20	_____

Total    100 \_\_\_\_\_

1. Complete the diagram below. Draw the missing part of the tree, and add all tip and node labels.



(20 points)

2. In class, I described both lungs and limbs as exaptations to life on land.

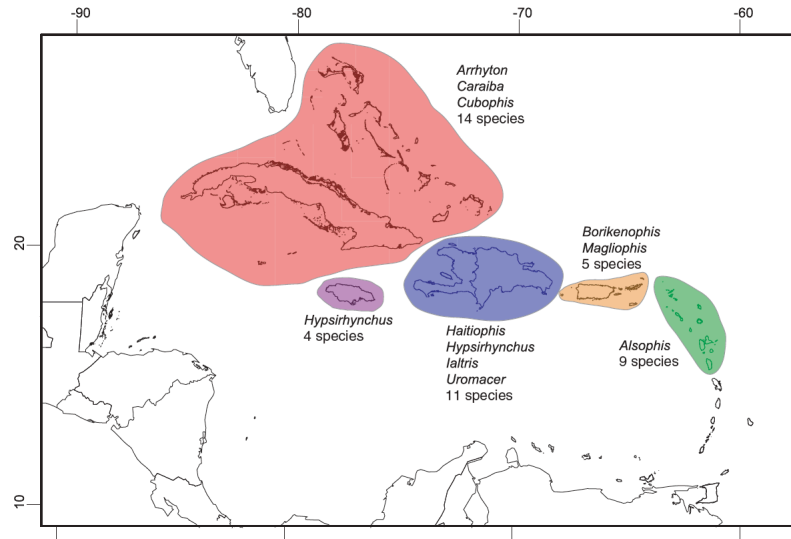
A. What is an **exaptation** (5 points)?

B. Did tetrapod limbs first evolve for walking on land? How do you know? (5 points).

C. Name and describe two extinct organisms that are important in understanding the origins of tetrapods. For EACH of these two organisms, describe some key traits and the species' likely habitat (10 points)

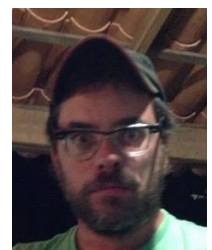
(20 points)

3. Alsophiines are slender snakes that occur in a variety of habitats throughout the West Indies (which are in the Caribbean, in case you are geographically challenged). The figure below shows the distribution of alsophiine species on Caribbean islands (listed by genus).



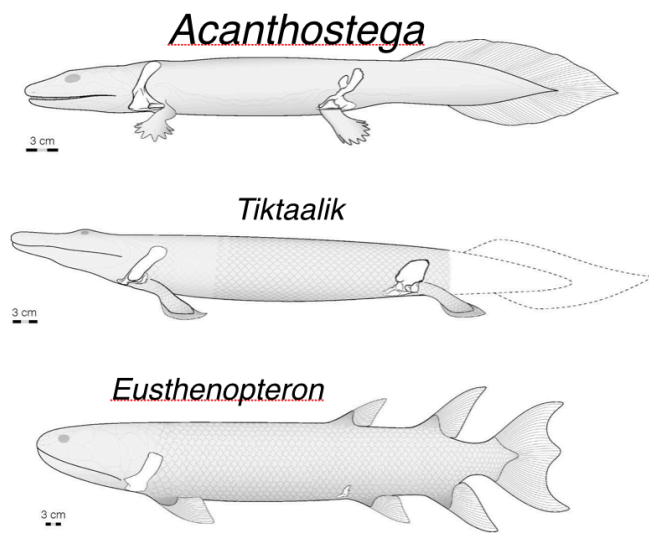
As a new graduate student in the Burbrink lab, you have decided to carry out a biogeographic study of how alsophiine snakes have come to have this pattern of geographic ranges. You have two years to do something awesome or Frank will scream at you like a madman. Briefly outline your thesis project. (*HINT: make sure your answer covers the two main hypotheses that biogeographers use to explain species ranges!*)

(20 points)



“... like a madman”

4. Explain this figure from Shubin et al. 2014 PNAS.



(20 points)

5. Your aunt Bertha was on Wheel of Fortune and won an all-expenses-paid trip to Brazil. Luckily, you've been caring for her and her cats for the past 10 years, so she's invited you along. You arrive in Manaus, in the middle of the Amazon, and start getting ready for an adventure. Complete the following dialogues.

A. One morning, Bertha is soaking the corns on her feet and a gecko skitters across the ceiling. This scares her so much that her dentures fall into the foot bath. "Oh my heavens! Did you see that devil-beast run across the ceiling? That must be some Brazilian magic!"

"Why, no, dear auntie," you reply. "That's not magic at all. In fact, I can explain exactly how geckos stick to things like that. It's simple, really..."

B. You are about to go on a hike. Bertha is struggling into some ridiculous old-timey hip waders. She looks strangely calm, especially given that you are about to go out into an entirely unfamiliar ecosystem. “Now, Bertha,” you say, “remember not to touch any snakes. There are some venomous species here!”

“Oh, I’m fine,” she says. “I know all about that. Like my grannie used to say, *Red on yellow, kill a fellow, Red on black, venom lack*. I’ll be fine.”

“OH NO, Auntie! That’s totally wrong. Things are much more complicated in terms of snake coloration here in the Amazon. In fact...”

(20 points)

Extra Credit: What is this Pokemon?

