

EEB 2214

Review questions from August 26

Today in lecture we discussed the goals of the course, which are: (1) to become familiar with vertebrate diversity and evolutionary history, (2) to realize that organisms evolve as integrated wholes, and (3) to examine the conservation states of different groups.

We also briefly discussed major organismal functions which are necessary for survival, what are they?

Later in lecture, Dr. Jockusch presented a few case studies to illustrate a key concept in vertebrate evolutionary biology – that systems do not operate in isolation, but rather are affected by one-another, and as a result, there are often unexpected consequences to evolutionary modifications. These are referred to as evolutionary “constraints” or “trade offs.”

- Describe the constraint operating in the Galápagos marine iguana. What is the anatomical/physiological basis of the constraint? How does their evolutionary history (or ancestry) explain the development of the constraint? Finally, how have fish and mammals overcome such a constraint?
- Describe the two important, interconnected life history characteristics in the Darwin’s finch example. Which feature would you say is under stronger selection, and why? Explain the long-term consequences of a shift in this trait (for both aspects of their life history).
- We saw how two different salamanders – *Taricha* sp. and *Hydromantes* sp. - have evolved very different approaches to lingual feeding. Which species’ mechanism would you say is more specialized, and how so? We learned how the same structure can have multiple functions; describe the three major functions of the tongue skeleton. We discussed how understanding evolutionary history is essential for explaining current patterns of diversity in locomotor and feeding mechanisms. How does what we know about the evolutionary history of these salamanders help us to understand how the more specialized, high-performance tongue protruding mechanism evolved?

Disclaimer: these review questions are not necessarily comprehensive, nor are they meant to be. They are meant to supplement your lecture notes as you review them, and alert you to the ways in which you should be thinking about the material, and formulate questions to test yourself. Exams will not be limited to the material highlighted in these review questions, so your lecture notes should be your primary reference.