

Practice Questions, set 1, final test, Herpetology 2017

- 1 Describe modes of locomotion in snakes and *Bipes*.
- 2 What elements of the skull allow kinesis, and in particular enlarged gape, in Alethinophidian snakes relative to (e.g.) *Sphenodon*.
- 3 What kinds of tooth attachment occur in squamates? Do teeth ever occur on other skull bones in squamates besides the maxilla and mandible?
- 4 Describe anatomies by which some squamates lose their tails.
- 5 Describe reproductive anatomy in tuataras, *Anolis*, and snakes.
- 6 Compare and contrast climbing mechanisms in geckos and salamanders.
- 7 Describe 'dynamic bipedalism' (anatomy and behavior) and give a herpetological species that displays this kind of locomotion.
- 8 What anatomical features allow herp species to glide? Give an example genus for each feature.
- 9 Contrast 'undulatory' and 'oscillatory' swimming in herps. Would you expect snakes to be 'undulatory' or 'oscillatory' swimmers?
- 10 Describe alternative hypotheses of evolutionary relationship for squamates due to molecular and morphological data. Discuss authors, methods, results, the position of Iguania, and which hypothesis you find more compelling and why. How do conflicting hypotheses of evolutionary history in squamates affect the interpretation of feeding ecologies in these lineages?
- 11 How would you distinguish a Scolecophidian from an Alethinophidian? List an example species from each group.
- 12 List Families of squamates, and give some biological information for each Family. Also list some genera for each Family and be able to assign individuals (from, say, a photo) to Family.
- 13 How would you distinguish an amphisbaenid from a snake?
- 14 Describe the phylogenetic position, skull structure, conservation status, number of species, and reproductive biology of *Sphenodon*.
- 15 Discuss venom delivery systems in squamates.
- 16 Describe structure and function of the tongue in squamates.
- 17 Compare and contrast feeding behavior and anatomy in Alethinophidians and Scolecophidians.
- 18 Describe the phylogenetic position and anatomy of *Pachyrachis*.
- 19 Be able to identify and differentiate skulls of the major herp groups discussed during lecture.
- 20 How do constrictor snakes kill their prey?
- 21 Rattlesnakes and helodermatid lizards evolved their venom...
  - a convergently
  - b homologously
  - c neither a nor bExplain your answer. What about their fangs? (convergence, homology, or other)?

- 22 How do two male snakes of the same species fight each other?
- a bite and tear
  - b constrict to suffocate
  - c constrict to heart failure
  - d envenomate
  - e wrestle
  - f 'yo mama' jokes
- 23 Contrast reproductive activity in temperate versus tropical herp species.
- 24 Know which reptile clades lay eggs and which give birth to live young.
- 25 Turtle sex. Quite the balletic artistry, no?
- 26 Describe mating behavior among garter snakes in Canada.
- 27 Categorize reptile clades by use of genetic or temperature dependent sex determination.
- 28 What patterns of Temperature dependent sex determination are seen in reptile taxa? What is the Charnov-Bull hypothesis for the evolution of TSD? How did Werner and Shine test this hypothesis? What did they find? What results would have contradicted the Charnov-Bull hypothesis?
- 29 Describe mating behavior in parthenogenetic whiptails, and contrast asexual reproduction in whiptails and amphibians.
- 30 Describe burrowing in spadefoot toads (anatomy, behavior).
- 31 Describe the impact and perception of "invasive" herps, including brown tree snakes, Burmese pythons, cane toads, chamaeleons, and coqui frogs. What steps are being taken to eradicate each of these species? For each of these species, is eradication a good idea? Why or why not?
- 32 "Naturalized species are bad." Discuss arguments in favor of and in opposition to this statement. Give examples in support of your arguments.
- 33 Explain how "invasive species" can or cannot cause "damage" to ecosystems. Try to answer without discussing potential harms/benefits to humans; and realize that ecosystems lack sentience, rationality, and any semblance of goal-directedness (that is, they do not seek out some favored state such as "stability" or "maximum diversity"). [no wrong answers here—I am interested in your take on this].
- 34 What did McGuire and Dudley find regarding the biomechanics of flight in *Draco*? Do you think a similar result would apply to *Chrysopelea*?