Herpetology 2022 Test 3 Practice questions

1 Describe modes of locomotion in snakes.

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? (see e.g. swallowing in Alethinophidian snakes)

4 Describe anatomies by which some squamates lose their tails.

5 Categorize herp clades according to internal and/or external reproductive fertilization.

6 Compare and contrast climbing/sticking mechanisms in geckos and salamanders.

7 Describe 'dynamic bipedalism' (anatomy and behavior) and list herpetological species that display 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 How would you distinguish a Scolecophidian from an Alethinophidian? List an example species from each group.

11 List Families of squamates, and give some biological information for each Family. Also list some genera for each Family.

12 How would you distinguish an amphisbaenid from a snake?

13 Describe the phylogenetic position, skull structure, conservation status, number of species, and reproductive biology of *Sphenodon*.

14 Describe venom delivery systems in squamates.

15 Describe structure and function of the tongue in squamates.

16 Compare and contrast feeding behavior and anatomy in Alethinophidians and Scolecophidians.

17 Be able to identify and differentiate skulls of the major herp groups discussed during lecture.

18 How do snakes that constrict kill their prey? How do snakes breathe while constricting prey?

19 Why might species breed seasonally in the tropics? How did Brown and Shine test hypotheses related to seasonal breeding in the tropics? What did they find?

20 Turtle sex. Quite the balletic artistry, no?

21 Categorize reptile clades by use of genetic or temperature dependent sex determination.

22 Describe burrowing in spadefoot toads (anatomy, behavior).

23 Describe the impact and human perception of "invasive" herps, including brown tree snakes, Burmese pythons, cane toads, 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?

24 "Naturalized species are bad." Discuss arguments in favor of and in opposition to this statement.

Give examples in support of your arguments.

25 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," even though humans may wish these potential virtues on them). You may want to incorporate arguments from your readings. [lots of possible answers here].

26 List five Families of turtles. For each Family, list whether the members of that family are aquatic, terrestrial, or both; and whether they are cryptodire or pleurodire. Anatomically, how could you assess whether a given turtle was cryptodire or pleurodire?

27 List genera of Crocodylians. For each genus, state whether the members of that genus are more closely related to *Crocodylus rhombifer* or to *Alligator mississippiensis*.

28 Describe parental care in crocodilians.

29 Give herpetological examples of the following terms: homoplasy, homology, synapomorphy, convergence. (Be sure to explain why each term applies to whatever example you give)

30 Discuss crocodylian farming as an approach to conservation of crocodylians. What aspects have been identified as difficulties for the "success" of this approach? Discuss a species for which farming has been a successful conservation approach. Discuss another species for which ranching has not been successful.

31 Describe approaches to intraspecific communication in crocodylians.

32 Describe and explain the relationship between juvenile body size, distress calling in juveniles, species identity, and parental response to distress call in crocodylians.

33 What is the main difference between "XY" and "ZW" genetic systems?

34 How do turtles breathe? (be more detailed than "via lungs"; what is the effect of the shell?).

35 Discuss turtle conservation, including the status of turtles relative to other vertebrate lineages and the factors that cause turtle population declines.

36 Describe anatomy and functions of the turtle shell.

37 Describe conflict between molecular and morphological data regarding the phylogeny of crocodylians. What result is the most recent resolution of this conflict?

38 List and describe synapomorphies of Squamata, Lepidosauria, Testudines, Serpentes.

39 In the study of evolution, what is a "key innovation?" Apply this term to snakes.

40 Did snake venom evolve as a predatory mechanism or as a defense mechanism? Explain your answer using scientific evidence.

41 How has the chytrid fungus affected snake populations, if at all?

42 Compare locomotion (footfall) patterns in salamanders and *Sphenodon*. If these forms are similar in their approaches, how are they similar?

43 What aspects of anatomy allow frogs to jump extraordinarily far?

44 Describe the arguments concerning invasive species of the following authors (see associated reading in each case). If useful, contrast these arguments against each other. If you use examples (good idea), use herp examples.

Dan Simberloff

Mark Davis

Mark Sagoff

Dov Sax and others, regarding the 'value' of 'invasive' species.

45 Label the parietal, frontal, nasal, premaxilla, maxilla, prefrontal on this skull. What reptile or amphibian group does this skull represent?

