

STUDENT HANDOUT #3: DICHOTOMOUS KEY TO MAMMAL SKULLS

Directions: Read each couplet below and decide which statement applies to the skull you are observing. Then proceed to the next couplet indicated by the number in bold. For example, if your skull has canines, proceed to couplet #2. If your skull does not have canines, proceed to couplet #8. HINT: When in doubt about the tooth formula, count the total number of teeth instead.

- 1a)** Skull has canines **2**
- 1b)** Skull lacks canines **10**
-
- 2a)** Skull has >10 teeth on any one side, top or bottom; skull measures 79-127mm (3.125-5in) in length and 57-69mm (2.25-2.75in) in width at its longest and widest points; the total number of teeth are 50 with a dental formula of: incisors 5/4, canines 1/1, premolars 3/3, and molars 4/4; there is well defined saggital crest..... **Virginia Opossum**
- 2b)** Skull has \leq 10 teeth on any one side, top or bottom..... **3**
-
- 3a)** The skull has 34 teeth with a tooth formula of: incisors 3/3, canines 1/1, premolars 3/3, and molars 1/2 and has a saggital crest..... **4**
- 3b)** Any other number of teeth; may or may not have a saggital crest..... **5**
-
- 4a)** Skull measures 60-69mm (2.375-2.75in) in length and 31-38mm (1.25-1.5in) in width for males; 57-60mm (2.25-2.375in) long and 31mm (1.25in) wide for females at its longest and widest points; last upper molar is dumbbell or “I” shaped..... **Mink**
- 4b)** Skull measures 57-59mm (2.25-3.125in) in length and between 38-50mm (1.5-2.0in) in width at its longest and widest points; last upper molar square shaped **Striped Skunk**

- 5a)** Skull measures approximately 15mm (0.625in) in length and 9mm (0.275in) in width at its longest and widest points; the skull has 38 teeth with a dental formula of: incisors 2/3, canines 1/1, premolars 3/3, and molars 3/3; there is a “U” shaped notch in the snout **Little Brown Bat**
- 5b)** The skull is larger and there is no “U” shaped notch in the snout **6**
- 6a)** Skull measures approximately 19-25mm (0.75-1.0in) in length and 12mm (0.5in) in width at its longest and widest points; rostrum is elongated; the skull has 32 teeth with a dental formula of either incisors 3/1, canines 1/1, premolars 3/1, and molars 3/3 or incisors 4/2, canines 1/0, premolars 2/1. and molars 3/3; teeth are pigmented brownish-red **Short-tailed Shrew**
- 6b)** The skull is larger and the teeth are not pigmented brownish-red **7**
- 7a)** Skull measures approximately 28-38mm (1.125-1.5in) in length and 19mm (0.75in) in width at its longest and widest points; rostrum is elongated; the skull has 36 teeth with a dental formula of incisors 3/2, canines 1/0, premolars 3/3, and molars 3/3; the first incisors are large and curved downward and backward, while the second and third incisors are very small; the hard palate extends beyond the molars..... **Eastern Mole**
- 7b)** The skull is larger and the first incisors are not large and curved downward and backward **8**
- 8a)** Auditory bullae greatly inflated; orbits large compared to skull size; skull measures between 101-139mm (4-5.5in) in length and between 69 and 104mm (2.75-4.125in) in width at its longest and widest points; the skull has 28 teeth with a dental formula of: incisors 3/3, canines 1/1, premolars 2/2, and molars 1/1 **Bobcat**
- 8b)** Skull ranges from 101-139mm (4-5.5in) in length and between 69 and 104mm (2.75-4.125in) in width at its longest and widest points, but bigger than 15mm (0.625in) in length and 9mm (0.275in) in width at its longest and widest points; number of teeth is 40 or more.. **9**

9a) Hard palate on roof of mouth extends past the last molar; has no saggital crest; skull measures 107-127mm in length (4.25-5in), and between 69-73mm (2.75-2.875in) in width at its longest and widest points; the skull has 40 teeth and the dental formula is: incisors 3/3, canines 1/1, premolars 4/4, and molars 2/2 **Raccoon**

9b) Skull measures between 120-130mm (4.75-5.125in) long and is between 66-73mm (2.625-2.875in) wide at its longest and widest points; the skull has 42 teeth with a dental formula of: incisors 3/3, canines 1/1, premolars 4/4, and molars 2/3 = 42; there is a saggital crest; the temporal ridges form a “U” shape on the top of the skull..... **Gray Fox**

10a) Skull is perforated with a bony web; skull measures between 60-82mm (2.375-3.25in) in length and between 34-38mm (1.375-1.5in) in width at its longest and widest points; the top incisors have a pair of the smaller incisors located just behind them; the skull has 28 teeth with a dental formula of: incisors 2/1, canines 0/0, premolars 3/2, and molars 3/3.....
..... **Eastern Cottontail**


10b) Skull is solid..... **11**

11a) Incisors have a chisel shape with an orange coating on the front; the skull has 16 teeth with a dental formula of: incisors 1/1, canines 0/0, premolars 0/0, and molars 3/3.....
..... **12**

11b) Incisors have a chisel shape with an orange coating on the front; skull has more than 16 teeth **13**

12a) Skull measures approximately 12mm (0.5in) wide and is between 22-25mm (0.875-1in) long at its widest and longest points..... **Deer Mouse**

12b) Skull measures 60-69mm (2.275-2.75in) in length and from 38-44mm (1.5-1.75in) in width at its longest and widest points; molars have a unique grinding surface called prismatic

dentition that looks like this when looking down on it  **Muskrat**

13a) Skull measures between 114-139mm (4.5-5.5in) in length and between 79-101mm (3.125-4.0in) in width at its longest and widest points; the skull has 20 teeth with a dental formula of: incisors 1/1, canines 0/0, premolars 1/1, and molars 3/3 = 20; skull has a well defined nasal slit when viewing the skull head on; there is a large saggital crest

.....**Beaver**

13b) Skull measures between 60-63mm (2.375in-2.5in) long and 31-34mm (1.25-1.375in) wide at its longest and widest points; the skull has 22 teeth with a dental formula of: incisors 1/1, canines 0/0, premolars 2/1, and molars 3/3; with large eye orbits; there is no saggital crest

.....**Eastern Gray Squirrel**