Name:_____

Lab Exercise 8   Faunas and Subsistence

Objectives:

Your objectives for this lab are to:

1. Practice identification of different animal taxa, stressing their diagnostic characteristics.
2. Comparing different taxa in terms of their morphology, environmental settings and behaviors.
3. Analyzing faunal data from Delaware Canyon to apply some of the principles and methods of zooarchaeology.

Materials

1. Cranial and post-cranial elements of bison, deer, horse, rabbit, coyote, bear, small rodents and turtle.
2. Human skeleton
3. Deer mandibles for age determination.
4. Faunal data for game taxa from Delaware Canyon.

Grading
Activities (data collection)   20 points
Answers to questions   55 points

Procedures

Follow the instructions below for each activity, and provide data and answers to questions as indicated.

Bone Identification

In teams, visit the sets of cranial and post-cranial bones provided.

1. What are the main differences in cusp patterns between the artiodactyls (bison and deer) and the carnivores (coyote) and bear (omnivores)? Sketch their cusp patterns from the side and occlusal (chewing surface) views of the second molar. (**10 points**)

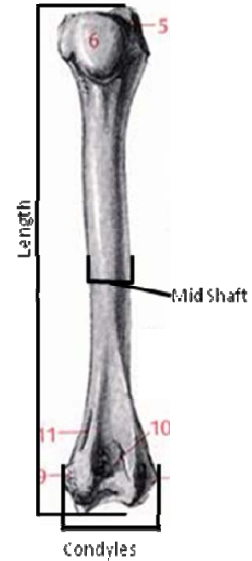   BISON   DEER   COYOTE   BEAR

Now let's compare the humerus as an example of a post-cranial bone. Make the following measurements (in mm) on the humeri indicated in the table below:

1. length
2. width at distal condyles
3. diameter at mid-shaft (this is the middle of the diaphysis)

	Length	Distal Condyles	Shaft diameter
Bison			
Deer			
Rabbit			
Rodent			

2. These measurements are indicators of the body mass of these animals. Because this is a weight-bearing limb, the width of the distal condyles may be a good index, because it must distribute the load to the bone below. Which bone(s) does the humerus articulate with? Where do humans fall into this pattern? Why should the human anatomy be different in this respect? (**5 points**)

3. Examine the turtle plastron, carapace and bone specimens. Notice how distinctive the plastron and carapace fragments are. How could this lead to overrepresentation of turtles in archaeological faunas? (**5 points**)

Examine the deer mandibles that have been identified by their age. For each mandible, indicate its properties (tooth eruption, loss and wear) that are diagnostic for its age, and record them below:

Mandible	Age	Properties
1		
2		
3		
4		

4. Why is age an important aspect of our analysis of deer or other taxa from archaeological sites? (*10 points*)

Analysis of Faunas from Delaware Canyon

The following table provides counts for key prey species form the faunas at Delaware Canyon. Calculate the indices as shown, and then proceed to answering the questions.

Before answering the questions, you should have completed the tasks above.

Delaware Canyon Faunas

	Archaic	Plains Woodland		Plains Village	
		Lower	Upper	Lower	Upper
Cottontail	148	1985	562	55	72
Jackrabbit	9	99	21		1
Squirrel	3	131	10	14	
Ground squirrel		9	1		4
Prairie dog		7			3
Canid	7	47	1	20	4
Elk				2	
White tailed deer	142	756	77	79	58
Bison	14	30		35	23
Antelope		3			
Box turtle		130		14	7
Pond slider		3			4
Snapping turtle		4			
Unid turtle	65	2565	383	254	264
NISP SUM	388	5769	1055	473	440

NISP restricted (less Unid Turtle)

TAXA SUM   (less Unid Turtle)

NISP/TAXA   (use restricted NISP)

Cottontail/Jack

Deer/Bison

5. The ratio of cottontail to jackrabbit is taken without assumptions to be an indicator of environmental change. An increase in the ratio (more cottontails, fewer jackrabbits) indicates an increase in precipitation and the expansion of forest habitat. What does the cottontail/jackrabbit ratio at Delaware Canyon say about how the environment changed occurred across time? (*5 points*)

6. How does the deer/bison ratio change in the same regard? Does this make sense given the rabbit ratio? (*5 points*)

Critical Thinking Questions

7. Now, what are some of the assumptions we must make when using fauna to reconstruct the environment of each occupation? Consider prey choice, mobility, specialized procurement, etc. (*15 points*)

8. What taphonomic processes could help explain the variability in the NISP to TAXA ratios? (**10 points**)

9. Overall, how did the Delaware Canyon fauna data lead us to the statements concerning differences in food procurement strategies between the Plains Woodland and Plains Village groups? Why is it necessary to have data from other sites, especially from large rivers valleys, to interpret the record at Delaware Canyon? (**10 points**)