

PLB 440 Grassland Ecology. Test 1. Fall 2003

Name: _____

Answer all questions:

Short answers (40% total, 5% each):

- 1) Label the following parts on the diagrams below showing *Eragrostis pectinata* (encircle structures as necessary, vague arrows in the direction of the figure will count for nothing).
- Lower glume.
 - Lemma.
 - Spikelet.
 - Leaf sheath
 - Location of ligule
 - Individual floret
 - Inflorescence.
 - Roots



Eragrostis pectinacea

2) Name three of the five grasses placed out at the back of the class and say something brief about their ecology.

a. Subfamily _____ Species _____ Ecological information _____

b. Subfamily _____ Species _____ Ecological information _____

c. Subfamily _____ Species _____ Ecological information _____

3) Match up the grasslands on the left with the one of the pairs of dominant native species on the right:

a. High grass Tropical Savanna.		i) <i>Agropyron spicatum</i> & <i>Festuca idohensis</i>
b. Temperate and Alpine meadows.		ii) <i>Stipa spartea</i> , <i>Sporobolus heterolepis</i>
c. Meadow Steppe grasslands		iii) <i>Uniola paniculata</i> & <i>Stipa gobica</i>
d. Desert Plains Grassland		iv) <i>Festuca sulcata</i> & <i>Koeleria gracilis</i>
e. True Prairie		v) <i>Nardus stricta</i> & <i>Molinia caerulea</i>
f. Palouse prairie		vi) <i>Pennisetum purpureum</i> & <i>Imperata cylindrica</i>
		vii) <i>Bouteloua eriopoda</i> & <i>Hilaria mutica</i>
		viii) <i>Dimeria spp</i> & <i>Panicum virgatum</i>
		ix) <i>Festuca rubra</i> & <i>Poa pratensis</i>

4) List three features of the grass spikelet that are considered to represent primitive characters:

- a. .
- b. .
- c. .

- 5) Evolutionarily, what is the status of the Chlorideae subfamily?
- 6) Why are the Joinvilleaceae important for an understanding of the Poaceae?
- 7) On what sort of characters is the most recent grass family classification based upon?
- 8) What is the global land area coverage of grassland? And, in what region are grasslands most extensive?

Essay questions (40% total, 20% each): Answer TWO questions.

- 9) Comment on the meaning of the following statement “*The Poaceae is a plant family that has incorporated much evolutionary innovation whilst shedding much that is superfluous.*” Chapman & Peat 1992.
- 10) How does the vegetation and environment of the Great Plains change as one moves from the south up to the north.
- 11) What have we learned so far about grasslands from Richard Manning’s book? Why does he say “*Our culture’s disrespect for its grasslands has produced an environmental catastrophe*”?

Bonus (1%):

What in common has happened to the native vegetation of the Palouse Prairie and the Pacific prairie?



Schizachyrium scoparium

PLB 440 Grassland Ecology. Test 1, take-home portion (20%). Due at start of class Tuesday Oct 21st .

Your answer should be three-four pages of double-spaced type, plus appropriate illustrations, tables, and references. This is a take-home exam. Do not plagiarize the work of others, and work alone. I expect to see reference made to the primary literature with 5 or more journal articles at least (web site citations are not allowed except for on-line, peer reviewed journals). Don't cite lecture notes.

Answer **ONE** of the following:

- 1) Discuss the vegetation/environmental relationships of the Serengeti grassland in Africa. How does it contrast with the N. American True Prairie and the Steppe grasslands of Asia?
- 2) What is it about the population and community ecology of the genus *Stipa* that makes it such an important grass many parts of the world?
- 3) Comment on the meaning of the following statement “...*the origin and spread of grass-dominated ecosystems is synonymous with the evolutionary history of the Poaceae itself...*” Jacobs et al 1999.