

Chapter 1, Where is Here?

Key Terms:

prairie	ecosystem	steppe	grassland	lichen
dominance	biomass	plain	savanna	biome
deciduous forest	escarpment	badlands	loess*	till*
glaciation*	kettle*	extirpated	ecoregion	

*will cover more in-depth in material related to Chapter 2

Main Concepts:

- Note locations of grasslands throughout the world and general conditions favoring grasslands over other biomes.
- List different grasslands in the U.S. and Canada—their names and characteristics.
- List the overall extent of the Great Plains, its general characteristics, and its geographical regions.
- Describe erosional effects of wind and water (liquid and frozen).
- Based on the author’s descriptions, explain why the Great Plains was once known as the “Serengeti of North America.” (This phrase will not be found in your chapter.) What happened to change this?
- How did prairies contribute to the science of ecology?
- What evidence can we use to reconstruct ideas on what pre-European or pre-contact prairies were like?
- Note the 15 different ecoregions of the Great Plains.
- Describe the transitions in overall grass height of the Great Plains from North to South and West to East.

Chapter 2, Digging Into the Past

Key Terms:

asthenosphere	lithosphere	craton	era	period
epoch	synapsid	mass extinction	terrane	palisade
alluvial fan	braided stream	glacial erratic	coulee	esker
kame	moraine	badlands		

Main Concepts:

- Note in general how heat from Earth’s core and the Sun help shape Earth’s surface.
- Note the influence of ancient (100’s of millions of years) shallow seas and sediments on building North American prairies.
- Note the influence of geologic uplift (e.g. highlands and boundary mountains) in creating land and organisms associated with the future North American prairies.
- Starting in the early part of the Cenozoic Era, note characteristics of the Great Plains and major climatic events that influenced its organisms (e.g., warm and wet ? cooler and drier ? even drier ? glaciation).
- Describe how glaciers form. About how much of North America was covered by them during the Cretaceous glaciations? How thick did they get?
- Describe major effects the glaciers had in shaping North American prairies.
- When were the earliest people established on the Great Plains? With what large animals did they coexist?
- Describe the major climate change after the last glaciation that favored expansion of the North American grassland.

Chapter 3, The Geography of Grass

Key Terms:

stomata	photosynthesis	forb	tuber
natural selection	El Niño	La Niña	disturbance
evapo-transpiration	precipitation		

Main Concepts:

- List some features of grass leaves that help the plant conserve water.
- List some features other than leaves that help grasses conserve water.
- Give an example and explain how latitude can affect a plant species timing of life cycle events.
- Note the effect of major air masses on temperatures and the amount of precipitation received by North American prairies, and overall vegetation height.
- Review the major climatic gradients across North American prairies. (Also check out a map to find some of the cities to which the makes reference.)
- Define El Niño and La Niña events. How do they affect weather in North American prairies?
- Describe how drought or wet weather can help perpetuate itself. How can the presence or absence of vegetation affect this?
- How will global warming probably affect the Great Plains? What evidence is there that global warming is starting to affect ecosystems?
- How does fire help maintain tallgrass prairie? What would this prairie convert to in the absence of fire? Why?
- Note how slope and aspect (direction of slope) affects moisture and prairie grasses.

Chapter 4, Secrets of the Soil

Key Terms:

microflora	microfauna	hectare	nematode
protozoan	mycorrhizae	legume	nitrogen-fixing bacteria
nodule	herbivore	rhizosphere	humus
leach	silt	ectothermic	microhabitat
microclimate			

Main Concepts:

- Note the type of organisms that contribute the most biodiversity to North American grasslands.
- Describe the mutualistic roles of mycorrhizae and nitrogen-fixing bacteria with prairie plants.
- Note the root to shoot ratio of prairie grasses.
- Describe why prairie soils tend to be so fertile (include the role of organisms and parent material).
- Note how the North to South temperature gradient and West to East moisture gradient affect soil type.
- List the basic vertical layers (horizons) of a structured soil profile.
- Describe how introduced (foreign) earthworms may be detrimental to the prairie and other ecosystems.
- Describe important roles of dung beetles, ants, and burrowing mammals in the prairie soil and ecosystem.

Chapter 5, Home on the Range

Key Terms:

rangeland	fragmented habitat	silica	cud
ruminant	trophic	lek	bison wallow
relative abundance (heterogeneity)	plant succession	climax community	patchiness
interspecific competition	homogeneous	coterie	estrus
	keystone		

Main Concepts:

- Why did the tallgrass prairie become the most endangered ecoregion in North America?
- Note parts of the North American prairie with the greatest grassland cover and why.
- In what ways do cattle and bison affect the prairie similarly? differently?
- Do heavily grazed (or plowed) areas restore themselves to their natural state when this disturbance is stopped? Why or why not?
- How does the vegetation of most grasslands that are moderately grazed (e.g., by migratory grazers) differ from those that are heavily grazed or not grazed at all?
- Describe the factors that contribute to patchiness (heterogeneity) of the prairie ecosystem. How can patchiness increase species diversity?
- How can cattle ranchers promote patchiness of the rangeland? Why is this difficult to achieve with [large-scale] commercial cattle production?
- List some of the roles of insect herbivores in the prairie ecosystem.
- Describe some of the prairie rodents and their habits. In particular, why are prairie dogs important to the prairie ecosystem?
- Describe some the adaptations (physical, behavioral, and physiological traits) of pronghorns.
- List some of the types of carnivores found on the prairie. Why does the author consider coyotes “keystone species” of the Great Plains prairie ecosystem?

Chapter 6, Water of Life

Key Terms:

wetland	marsh	ephemeral	crustacean	shorebird	pothole
slough	briny	saline	alkaline	anaerobic	diver
emergent	drawdown	invertebrate	amphibian	dabbler	riffle
pool	floodplain	mollusk	plankton	sandbar	backwater

Main Concepts:

- Describe a playa; describe a pothole. Where can they be found? What organisms do they support?
- Note the different categories of potholes/sloughs based on their water’s persistence.
- Describe the lifecycle of a pothole or prairie marsh.
- Explain how drought can renew biodiversity in a pothole.
- Explain how some aquatic species that are not very mobile get from one wetland to another.
- Distinguish dabbling from diving ducks and the type of wetlands they prefer.
- Name some of the human causes of wetland loss.
- How has crop growing negatively impacted prairie wetlands? (Note both direct and indirect effects.) How did the Conservation Reserve Program help boost duck numbers?
- Name some of the major rivers of the Great Plains.
- List some of the threats to mussels found in streams of the Great Plains.
- Note the negative impacts of irrigation, damming, and channelization on river ecosystems

Chapter 7, Prairie Woodlands

Key Terms:

myrmecophilous	grove	lignin	phloem	conifer	deciduous
savanna	ecotone	escarpment	riparian	meristem	brood parasite
habitat edge					

Main Concepts:

- How does a tree provide needed water and minerals to its leaves?
- Contrast the structure and layout of tree roots with the roots of many prairie grasses and forbs.
- List and briefly describe major woodland and savanna regions of the North American prairies.
- Note how relic Ice Age coniferous forest have survived in limited parts of the Great Plains.
- Note how fire suppression has helped contribute to the conversion of grassland to woodland.
- Describe how dams have negatively impacted riparian forests, both upstream and downstream (note contrasting effects).
- Note how the spread of woodland birds has followed the large-scale planting of trees in the prairie.
- Besides woodland birds, note which mammals have expanded into the woodlands encroaching the prairie.

Chapter 8, The Nature of Farming

Key Terms:

fecundity	weeds	biocontrol	plague	parasitoid
predator	till	National Grassland	Conservation Reserve Program	

Main Concepts:

- Describe the agricultural practices of native Americans such as the Plains Gardeners; contrast these with the agricultural practices of European settlers.
- Why are modern agricultural fields so species poor compared to native prairie?
- What are some reasons for why certain species of insects (e.g., some grasshoppers) may become agricultural pests.
- Note the ripple effect insecticides can have on the prairie ecosystem.
- Describe how maintaining as much plant diversity as possible adjacent to crops aids biological control (biocontrol).
- Describe the factors inducing farmers to plow up the vast majority of their land and the impact on birds.
- Describe some of the farming techniques and programs that have helped grassland birds (and other prairie species).

Chapter 9, Long -Range Forecast

Key Terms:

subspecies	habitat specialist	habitat generalist	species of concern
endangered	hibernacula	venomous	invasive
conservation easement	restoration	remnant	corridor
Greenhouse Effect			

Main Concepts:

- Explain whether native prairie is experiencing a net gain or loss and why.
- Describe how American Bison were nearly driven to extinction and how they were saved from extinction. (Note the coalition of different individuals and groups.)
- How many populations of bison today are direct descendents from the original American Bison? Where are they located?
- Where are large tracts of native prairie generally still found? How is this land managed?
- Describe how ranching has helped preserve prairie in a more intact state than other land uses.
- Describe some of the benefits and downfalls of small, isolated prairie patches (either as remnants or restorations).
- What was the Green Revolution? How did it help humans? What has been its major downsides?
- In general, what is organic farming?
- Name the two major priorities for prairie conservation.