

Autecology: Introduction to Animals and Their Adaptations of the Prairie

I. Foraging Adaptations for an Open Habitat

A. Herbivory

Mammals:

Special adaptations for the herbivorous diets:

1. Teeth – premolars are commonly molariform; reduction or loss of canines; diastema between the incisors and cheek teeth.

Molariform teeth are sometimes unrooted or continuously erupting.

Perissodactyla {odd-numbered hoofed mammals}

2. Specialized digestive system. Animals do not have the enzymes to digest cellulose. A well developed bacterial flora – through fermentation – aids in breaking down the cellulose. Occurs primarily in the large intestine and enlarged colon.

Artiodactyla {even-numbered hoofed mammals}

3. Although the artiodactyls also use fermentation to aid in the digestion of plant material, it is accomplished by different means.

There is an enlarged stomach divided into four chambers. In the first chamber – the rumen – large food particles float on the fluid. They can then be regurgitated, further chewed, and reingested.

Insects:

Abundant insect populations may consume a vast amount of herbage, e.g., grasshoppers and prairie grasses.

Many have a one-to-one relationship with plants* e.g., weevil (*Apion rostrum*)- *Baptisia*; weevil-*Silphium*; Karner's blue butterfly-*Lupinus*. Both larval and adult forms may be important herbivores.

*{Implications for burn regimes?}

B. Predation

Some grassland predators:

snakes: fox snake, blue racer (rodents)
garter snake (invertebrates, vertebrates esp. in and around water)
Western hog-nosed (variety of vertebrates)

plains leopard frog (invertebrates)

ornate box turtle (invertebrates: insects)

racerunner (invertebrates: insects, esp. sandy, gravelly area)

canids e.g., coyote

mustelids e.g., badger, black-footed ferret

Prey Procurement

size (extinct mammals) e.g., buffalo wolf,
plains grizzly

stealth

specialized adaptations e.g., digging

interspecific cooperation e.g., badgers and coyotes

II. Coping with an Extreme or Variable Environment

Burrowing (Fossorial)

pocket gophers

prairie dogs—keystone species

snakes?

Semifossorial

voles

shrews

Daily Activity Patterns

diurnal
nocturnal
crepuscular

Season Activity Patterns

migration esp. birds, Emberizinae: sparrows

hibernation e.g., ground squirrels

food storage e.g., some rodents

“grouping” e.g., mice in winter

Fire avoidance

Predator Avoidance

Burrowing

Size

Speed

Activity Patterns

Other Behavior (e.g., ground nesting birds)