**Community Ecology Notes Guide 2019**

**Concept: Describe the structure of a community according to its species composition and diversity.**

Community Ecology

-Community

-all the organisms that live together in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-interactions

-Community Ecology

-study of interactions among all populations in a common environment



**Concept: Explain how interactions within and among populations influence community structure.**

-The structure of a community is measured and described in terms of species composition and species diversity.

**Concept: Relationships among interacting populations can be characterized by positive and negative effects and can be modeled. Examples include predator/prey interactions, trophic cascades, and niche partitioning.**

Niche

-An organism’s niche is its ecological role

-habitat = address vs. niche = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Niche & competition

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Exclusion

-No two similar species can occupy the same niche at the same time

**Concept: Competition, predation, and symbioses, including parasitism, mutualism, and commensalism, can drive population dynamics.**

Interspecific interactions

-Symbiotic interactions

-competition (-/-)

 compete for limited resource

competitive exclusion!

-predation / parasitism (-/+)

-mutualism (+/+)

-lichens (algae & fungus)

-commensalism (+/0)

-barnacles attached to whale

**Concept: Interactions among populations determine how they access energy and matter within a community.**

Predation drives evolution

-Predators adaptations

-locate & subdue prey

-Prey adaptations

-elude & defend

Anti-predator adaptations

-Hide from predators

-avoid detection

-camouflage

-Warn predators

-advertise how undesirable you are as prey

-aposematic coloration

-apo = away & sematic = sign/meaning

-Batesian mimicry

-Mullerian mimicry

**Concept: Cooperation or coordination between organisms, populations, and species can result in enhanced movement of, or access to, matter and energy.**

Coevolution in Community

-Predator-prey relationships

-Parasite-host relationships

-Flowers & pollinators

Characterizing a community

-Community structure

-species diversity

-how many different species

-composition

-dominant species

-most abundant species or highest biomass (total weight)

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species

-changes over time

-succession

**Concept: Natural and artificial ecosystems with fewer component parts and with little diversity among the parts are often less resilient to changes in the environment.**

Species diversity

-greater diversity = greater \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

- Greater biodiversity offers:

-more food
-resources

-more habitats

-more resilience
-in face of environmental change

**Concept: Keystone species, producers, and essential abiotic and biotic factors contribute to maintaining the diversity of an ecosystem.**

Keystone species

-Influential ecological role

-exert important regulating effect on other species in community

-keystone species increases diversity in habitat

Variation in Populations

-The structure of a community is measured and described in terms of species composition and species \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

-An adaptation is a genetic variation that is favored by selection and is manifested as a trait that provides an advantage to an organism in a particular environment.

-Mutations are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and are not directed by specific environmental pressures.

Introduced species

-Non-native species

-transplanted populations grow exponentially in new area

-out-compete native species ( \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species)

-loss of natural controls

-lack of predators, parasites, competitors

-reduce diversity

-examples: African honeybee, gypsy moth, zebra mussel, purple loosestrife

**Describe human activities that lead to changes in ecosystem structure and/ or dynamics.**

The distribution of local and global ecosystems \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ over time.

Human impact accelerates change at local and global levels—

 -The introduction of new diseases can devastate native species.

-Habitat change can occur because of human activity.

**Explain how geological and meteorological activity leads to changes in ecosystem structure and/or dynamics.**

-Geological and meteorological \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ affect habitat change and ecosystem distribution. Biogeographical studies illustrate these changes.

**Concept: Describe the relationship between ecosystem diversity and its resilience to changes in the environment.**

-Natural and artificial ecosystems with fewer component parts and with little diversity among the parts are often \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ resilient to changes in the environment.

**Concept: Explain how the addition or removal of any component of an ecosystem will affect its overall short-term and long- term structure.**

-The diversity of species within an ecosystem may influence the organization of the ecosystem.

-The effects of keystone species on the ecosystem are disproportionate relative to their abundance in the ecosystem, and when they are removed from the ecosystem, the ecosystem often \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.