Fold along the line and glue this side down in your Interactive Science Notebook.

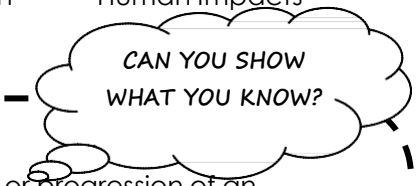
Chapters 3-6: Ecology

Learning Goals: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment. Changes in an ecosystem can affect biodiversity and biodiversity contributes to an ecosystem's dynamic equilibrium There is a cycling of matter (for example: carbon, nitrogen) and the movement and change of energy through the ecosystem (for example: some energy dissipates as heat as it is transferred through a food web) An organism's adaptations (for example, structure, behavior) determine its niche (role) in the environment. Variation within a population improves the chances that the species will survive under new environmental conditions

Key Concepts:

Ecosystem Organization	Abiotic vs. Biotic Factors	Energy Flow
Food Chains & Food Webs	Energy Pyramids	10% Rule
How Organisms Obtain Energy	Habitats vs. Niches	Biomes
Organism Relationships	Types of Symbioses	1' vs. 2' Succession
Population Growth	Logistic vs. Exponential Growth	Human Impacts

Biogeochemical Cycles-Water, Carbon, Nitrogen, Phosphorus



Essential Questions:

1. How are ecosystems organized?
2. How does a change in abiotic factors influence the stability or progression of an ecosystem?
3. What happens when the cycling of matter in ecosystems is disrupted?
4. How do organisms depend upon each other within an ecosystem?
5. What energy transformations occur in ecosystems?
6. What factors affect population growth?
7. How is the movement of matter and energy through an ecosystem different?
8. How do keystone species maintain balance in ecosystems?
9. How does the introduction of a non-native species influence the balance of an ecosystem?
10. How is the succession of local organisms altered in an area that is disturbed or destroyed?

Vocabulary: (**+**) = Can explain it; (**-**) = Only heard it; **0** = No idea

Page	Term	Pre	Post	Memory Clue
	1. ecology			
	2. biosphere			
	3. biome			
	4. ecosystem			

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Page	Term	Pre	Post	Memory
	5. abiotic factor			
	6. biotic factor			
	7. limiting nutrient			
	8. eutrophication			
	9. primary producer			
	10. consumer			
	11. decomposer			
	12. autotroph			
	13. heterotroph			
	14. saprotroph			
	15. detritus			
	16. phytoplankton			
	17. biomass			
	18.trophic level			
	19. 10% rule			
	20. biomagnification			
	21. nitrogen fixation			
	22. denitrification			
	23. habitat			
	24. niche			
	25.mutualism			
	26. parasitism			
	27. commensalism			
	28. competition			
	29. predation			
	30. ecological succession			
	31. pioneer species			
	32. keystone species			
	33. population density			
	34. density-independent factor			
	35 density-dependent factor			
	36. carrying capacity			
	37. exponential growth			
	38. logistic growth			
	39. invasive species			
	40. blodiversity			
	41. monoculture			
	42. emigration			

What I Need to Know/Be able to do:

- ☐ **Distinguish** the difference between biotic and abiotic factors.
- ☐ **Describe** the levels of biological organization.
- ☐ **Use** food chains, food webs, energy and biomass pyramids to show how energy flows through ecosystems.
- ☐ **Compare** and **contrast** autotrophs and heterotrophs.
- ☐ **Differentiate** between an organism's habitat and niche.
- ☐ **Sort** organisms into autotrophs, herbivores, omnivores, carnivores, detritivores, and saprotrophs.
- ☐ **Analyze** the interactions between organisms in a food web.
- ☐ **Identify** the ultimate energy sources for ecosystems.
- ☐ **Compare and contrast** the 3 main types of ecological pyramids.
- ☐ **Compare** the biogeochemical cycles of nutrients (carbon, nitrogen, water, phosphorus.)
- ☐ **Classify** organism symbioses.
- ☐ **Graph** and **interpret** population growth curves.
- ☐ **Explain** the concepts of carrying capacity and limiting factors.
- ☐ **Analyze** and **interpret** data about the impact of removing keystone species from an ecosystem or introducing non-native species into an ecosystem
- ☐ **Explain** the trends in human population growth.
- ☐ **Describe** several factors that could limit or decrease biodiversity.
- ☐ **Explain** how human activities affect the environment.
- ☐ **Explain** how biomagnification affects organisms in a food chain.
- ☐ **Explain** how biotic and abiotic factors function as limiting factors within an ecosystem.