

Unit 1 - Introduction to Zoology

STAGE 1 DESIRED RESULTS		
Standards	Transfer	
<p>3.1.9-12.B Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>3.1.9-12.S Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.</p>	<p><i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> ❑ Evaluate systems to connect how form determines function in animals and how that evidence is used to classify and organize life. 	
	Meaning	
	<p>UNDERSTANDINGS <i>Students will understand that...</i></p> <ul style="list-style-type: none"> ❑ Organisms have characteristic structures that enable specific functions and behaviors. ❑ Diversity of life can be viewed through an evolutionary lens and includes simple to complex species of animals. ❑ Comparisons between species provide evidence that they evolved from common ancestors, explaining the similarities and differences between species. 	<p>ESSENTIAL QUESTIONS <i>Students will keep considering...</i></p> <ul style="list-style-type: none"> ❑ How are animals different from one another? ❑ How do the structures of animals enable their unique life functions? ❑ What evidence supports the relationships between animal species?
	Acquisition(need to align with above and standards)	
<p><i>Students will know...</i></p> <ul style="list-style-type: none"> ❑ Systems of specialized organelles within eukaryotic animal cells help them perform the essential functions of life. ❑ Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. ❑ Animals are classified into phyla based on structural and evolutionary adaptations. 	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> ❑ Using scientific evidence to create and interpret taxonomic models (dichotomous keys, phylogenetic trees, cladograms) showing species' relatedness due to structural characteristics as a result of common ancestry. ❑ Using anatomical terms, directions, and planes for non-bipedal animal dissections. 	

Unit 2 - Marine Animals

STAGE 1 DESIRED RESULTS		
Standards	Transfer	
<p>3.1.9-12.B Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>3.1.9-12.D Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.</p> <p>3.1.9-12.G Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.</p> <p>3.1.9-12.S Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.</p>	<p><i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> ❑ The diversity of marine animals we see today is the result of millions of years of adaptations to changing environments. Animals, and the ecosystems they live in, function as dynamic systems, and changes to one part of the system—like form, structure, or environment—affect the whole. 	
	Meaning	
	<p>UNDERSTANDINGS <i>Students will understand that...</i></p> <ul style="list-style-type: none"> ❑ Increasing biological complexity has evolved in marine animals and the unique evolutionary adaptations have enabled different phyla to exploit specific ecological niches successfully. ❑ Evolutionary changes have enhanced survival strategies, providing insight into the richness of marine biodiversity. 	<p>ESSENTIAL QUESTIONS <i>Students will keep considering...</i></p> <ul style="list-style-type: none"> ❑ How has biological complexity evolved among marine animal phyla? ❑ What are the key adaptations that marine animals have evolved to survive in aquatic environments? ❑ What role does the environment play in shaping the evolution of marine animal phyla?
Acquisition(need to align with above and standards)		
	<p><i>Students will know...</i></p> <ul style="list-style-type: none"> ❑ The hierarchical complexity of marine phyla has developed over time from porifera to chordates. ❑ Different types of body symmetry, such as radial and bilateral symmetry, and how it relates to an animal's evolution and function. ❑ The differences in body plans, including acoelomates, pseudocoelomates, and coelomates, highlight how structural complexity supports advanced physiological functions. ❑ The diversity in feeding mechanisms (filter feeding to nematocysts), locomotion (cilia to jet propulsion), sensory adaptations (statocysts to complex eyes), and reproductive strategies (budding, external fertilization, and complex life cycles) that demonstrate the diversity of survival adaptations in marine animals. 	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> ❑ Understanding of the hierarchy of biological classification to accurately organize animal phyla. ❑ Recognizing why certain adaptations have evolved because of the marine environment. ❑ Comparing and contrasting anatomical and physiological, i.e. digestive, respiratory, and circulatory systems, adaptations of animal phyla through increasing complexity in marine environments.

Unit 3 - Freshwater Animals

STAGE 1 DESIRED RESULTS		
Standards	Transfer	
<p>3.1.9-12.B Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>3.1.9-12.D Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.</p> <p>3.1.9-12.G Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.</p> <p>3.1.9-12.S Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.</p>	<p><i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> ❑ The diversity of freshwater animals we see today is the result of millions of years of adaptations to changing environments. Animals, and the ecosystems they live in, function as dynamic systems, and changes to one part of the system—like form, structure, or environment—affect the whole. 	
	Meaning	
	<p>UNDERSTANDINGS</p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> ❑ Increasing biological complexity has evolved in freshwater animals and the unique evolutionary adaptations have enabled different phyla to exploit specific ecological niches successfully. ❑ Evolutionary changes have enhanced survival strategies, providing insight into the richness of freshwater biodiversity. 	<p>ESSENTIAL QUESTIONS</p> <p><i>Students will keep considering...</i></p> <ul style="list-style-type: none"> ❑ How has biological complexity evolved among freshwater animal phyla? ❑ What are the key adaptations that freshwater animals have evolved to survive in aquatic environments? ❑ What role does the environment play in shaping the evolution of freshwater animal phyla?
	Acquisition(need to align with above and standards)	
	<p><i>Students will know...</i></p> <ul style="list-style-type: none"> ❑ The hierarchical complexity of major freshwater phyla has developed over time from annelids to chordates. ❑ The differences in body plans and evolution of segmentation and cephalization in freshwater animals. ❑ The diversity in respiration, from cutaneous respiration to gills, locomotion, from cilia, to specialized appendages, to streamlined body shapes, digestion, and osmoregulation unique to freshwater animals. ❑ Adaptations allowed some freshwater animals, such as amphibians, to make the transition from an aquatic to a terrestrial environment, highlighting key evolutionary milestones. 	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> ❑ Understanding of the hierarchy of biological classification to accurately organize animal phyla. ❑ Recognizing why certain adaptations have evolved because of the freshwater environment. ❑ Comparing and contrasting anatomical and physiological, i.e. digestive, respiratory, and circulatory systems, adaptations of animal phyla through increasing complexity in freshwater environments.

Unit 4 - Terrestrial Animals

STAGE 1 DESIRED RESULTS		
Standards	Transfer	
<p>3.1.9-12.B Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>3.1.9-12.D Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.</p> <p>3.1.9-12.G Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.</p> <p>3.1.9-12.S Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.</p>	<p><i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> ❑ The diversity of terrestrial animals we see today is the result of millions of years of adaptations to changing environments. Animals, and the ecosystems they live in, function as dynamic systems, and changes to one part of the system—like form, structure, or environment—affect the whole. 	
	Meaning	
	<p>UNDERSTANDINGS <i>Students will understand that...</i></p> <ul style="list-style-type: none"> ❑ Increasing biological complexity has evolved in terrestrial animals and the unique evolutionary adaptations have enabled different phyla to exploit specific ecological niches successfully. ❑ Evolutionary changes have enhanced survival strategies, providing insight into the richness of terrestrial biodiversity. 	<p>ESSENTIAL QUESTIONS <i>Students will keep considering...</i></p> <ul style="list-style-type: none"> ❑ How has biological complexity evolved among terrestrial animal phyla? ❑ What are the key adaptations that terrestrial animals have evolved to survive on land? ❑ What role does the environment play in shaping the evolution of terrestrial animal phyla?
	Acquisition(need to align with above and standards)	
	<p><i>Students will know...</i></p> <ul style="list-style-type: none"> ❑ The hierarchical complexity of major terrestrial phyla has developed over time from Platyhelminthes to Chordates, with a focus on birds and mammals. ❑ The differences in body plans and the evolution of segmentation and cephalization, allow for complex nervous systems of terrestrial animals. ❑ The diversity in respiration, from cutaneous respiration to tracheal systems, to lungs), locomotion (including jointed appendages to wings), reproductive strategies, feeding adaptations, and water conservation in terrestrial animals. 	
	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> ❑ Understanding of the hierarchy of biological classification to accurately organize animal phyla. ❑ Recognizing why certain adaptations have evolved because of the terrestrial environment. ❑ Comparing and contrasting anatomical and physiological, i.e. digestive, respiratory, and circulatory systems, adaptations of animal phyla through increasing complexity in terrestrial environments. 	

