Correlation of *Next Generation Science Standards* with Aquatic WILD Activities

This document correlates the activities in the *Aquatic WILD K-12 Curriculum & Activity Guide* with the Performance Expectations (PEs) of the *Next Generation Science Standards* (NGSS). The table on the following pages represents an "ongoing correlation" that will evolve based on feedback from educators who are incorporating the new standards into their instruction using Aquatic WILD activities. Additionally, the document will be developed down the road as the activities are further correlated to the three dimensions of NGSS: practices, crosscutting concepts and disciplinary core ideas. The following correlations to the PEs are ranked using a 3-tiered scale outlined below. The column to the left of the correlation ranking shows comments made by the reviewers as they read through the activities and standards. These comments were included in the document to serve as a useful annotation for educators, specifically in cases where modifications are needed to meet the listed PEs. Ideas and feedback regarding the correlations are encouraged; please submit comments to info@councilforee.org.

Grade levels are designated as:

Lower Elementary	Upper Elementary	Middle School	High School
LE (K-2)	UE (3-5)	MS	HS

The 3-tiered scale was incorporated to more accurately capture the correlations between the activities and the NGSS Performance Expectations. The three categories indicate the degree of correlation:

*** Three stars indicate the activity **directly addresses** and is well-aligned with the PE

** Two stars indicate the activity addresses the Performance Expectation, but **some modification is required** to fully meet the PE. Reasons an activity may have been ranked with two stars include the following:

- The concept of the PE (e.g. resource availability affects organisms and populations of organisms in an ecosystem) is addressed by the activity, but the practice of the PE (e.g. analyze and interpret data to provide evidence) is not included in the activity.
- The PE is addressed in a small component of the activity, such as an extension.
- A minor adaptation, such as including a different set of discussion questions, makes the activity correlate to the PE

* One star indicates the activity connects to some idea in the PE, but significant adaptation to the activity as-written is required to fully meet the PE. These activities *support* the PE and **can be used as a supplemental activity** with additional instruction and different activities to fully address the PE.

Activity Name	Page #	Grade Levels	NGSS correlation (Student Performance Expectation)	Comments	Correlation Ranking
Section 1:Ecological Knowledge					
Wildlife Populations					
Are You Me?	2--8	LE (K-2)	1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	To meet this PE, in addition to Extension #3, have students research behavior of the chosen animal to determine patterns.	**
			1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Only animals are addressed in this activity. Can add images of plants to strengthen PE connection.	***
			2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.	Adding Extensions 1 and 2 strengthen this PE. Only addresses animals; add plants to procedure to fully address PE.	**
Fishy Who's Who	9-11	UE (3-5)	3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	This activity focuses on fish species. This PE may be fully addressed by having students include this information in the "biography" each creates. Extension 1 can help strengthen PE, too.	*
			3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	By including Extension 1, the Disciplinary Core Idea behind this PE is addressed in regards to fish species and aquatic habitats.	**

			3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	Adapting Extension #4 may help address this PE. After identifying "hotspots" and the problem(s) occurring there, have students evaluate how the environment, plants and animals may change.	*
Whale of a Tail	12-17	MS	MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	Significant adaptation required to meet this PE: Include connection where students learn about genetic factors that influence growth, have students research factors that affect whale growth and size. How is the growth of a whale affected by environmental and genetic factors?	*
Migration Headache	18-23	MS	MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.		***
			MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.		***
			MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		***

			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	With adding Extensions #2 and #7, this PE can be addressed by having students design a method for monitoring and minimizing the loss/degradation of wetlands.	**
Habitats, Ecosystems and Niches					
Got Water?	24-33	UE (3-5)	3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.		***
			3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	Including Extension #1 will help meet this PE. Adding the *In Step with STEM* connections will also strengthen.	**
			4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.	Implementing the fourth *In Step with STEM* connection will have students analyze and interpret data from maps. Does not necessarily have students "describe patterns of Earth's features."	*

			5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Adaptations needed to meet this PE. Extensions #2 and #4 have students draw and label sources of food and water, but do not include describing movement of matter between all PE's components. After completing the activity, have students create a model like a food chain/web based on the data collected about any animals from their investigation.	*
Designing a Habitat?	34-36	UE (3-5) MS	3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.	The PE may be addressed by implementing the *In Step with STEM* connection and requiring students to note examples found in the AZA Animal Care Manuals of traits affected by environmental factors. For instance, the manual for "jellyfish" describes how different water temperatures will change the growth rate of jellies.	*
			3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.		***
			3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	The activity relates directly to these engineering concepts by having students design artificial habitats for a given	***

			3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	animal. Including Extensions #2 and #3 as well as the *In Step with STEM* will strengthen the connections.	***
			MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.		***
Water Safari	37-43	LE (K-2)	K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.	Activity has students observe sources of water for wildlife and reinforces the idea that water is essential for survival of wildlife.	***
			K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.	By completing step 2 of the *Organizing and Analyzing the Data* section of the procedure, students will meet this PE for animals. Also, Extension #4 makes the human connection of the PE.	***
			K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	This activity meets the PE in regards to water and living things if the final part of the *Drawing Conclusions* procedure is completed. It is strengthened by including the third *In Step with STEM* connection.	***

			2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.	This PE can be met by adapting the procedures to having students conduct the investigation in at least two different habitats to compare the results. Including observations of plants will help fully meet the PE.	**
			2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.	Completing the second *In Step with STEM* connection can meet the "bodies of water" portion of this PE.	*
Where Does Water Run?	44-53	MS, HS	MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.		***
			HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.		***
			HS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.	As is, this activity does not include investigating properties of water such as heat capacity, density, or the polar nature of its molecular structure. However, ties can be made to the mechanical effects of water on Earth materials – stream transportation, deposition of materials, erosion, etc.	*

			HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.		***
Urban Waterway Checkup	54-62	MS	MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.		**
			MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		***
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.		**
Water Canaries	63-68	MS, HS	MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		***
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.		**
			HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.		**
			HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.		*

Interdependence					
Aqua Words	69-71	LE (K-2), UE (3-5)	None		
Water Plant Art	72-74	LE (K-2), UE (3-5)	K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.	Extensions 2, 3, and 4 strengthen this PE.	***
			2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.	The objective of the activity is to identify aquatic plants as important to aquatic habitats and wildlife. This activity could be used to introduce students to aquatic plants before conducting further investigations.	*
			2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.	Focuses on aquatic habitats. Extensions 4 and 5 strengthen this PE.	***
			3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Extension 4 helps meet this PE.	**
			3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	This activity develops student understanding of aquatic habitats. Extensions 3 and 5 strengthen this PE.	***
			4-LS2-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Completing the *In Step with STEM* meets this PE for plants. Extensions 4 and 5 strengthen tie to animals.	**

			5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Completing Extension 2 helps meet this PE. Have students create a food chain/web.	**
Marsh Munchers	75-79	UE (3-5)	3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	This activity focuses on the salt marsh ecosystem.	***
			4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Encourage students to connect how they mimic the behavior of their assigned animal to the structure and behavior of the actual animal.	*
			5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	This PE is well met through this activity, and completing the second *In Step with STEM* item and Extension 1 strengthen it.	***
Wetland Metaphors	80-83	UE (3-5)	4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.	This may be met by the first *In Step with STEM*. Has students locate and/or identify wetlands.	*
Hooks and Ladders	84-90	MS	MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.		**
			MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.		***

			MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affects populations.		***
Micro Odyssey	91-93	UE (3-5) MS	4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.		***
			5-LS2-1. Develop a model to describe the movement of matter among, plants, animals, decomposers, and the environment.	Completing Evaluation #3 meets this PE.	***
			MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	The activity provides opportunity for students to observe unicellular organisms and other microscopic organisms.	***
			MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	Completing Evaluation #3 meets the flow of energy among living parts of the ecosystem part of this PE. Add abiotic factors to the model.	***
			MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	Extension 1 helps meet this PE.	*
Blue Ribbon Niche	94-97	UE (3-5) MS	3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Activity centers on organisms in riparian habitats.	***

			3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	To address this PE, step #9 of the main procedures should be met. Additionally, Extension #2 will strengthen this PE.	**
			5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	To meet this PE, after students research and discuss their animals and riparian zones, have students create a food chain/web.	*
			5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	Extension #2 should be conducted – relates to restoration of riparian zones.	**
			MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		***
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	After steps #9 and #10 are complete, have students choose a human impact to meet this PE. Extension #2 and the first In Step with STEM item may be helpful as well.	**
Changes and Adaptations					
Fashion a Fish	98-102	LE (K-2) UE (3-5)	K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.	The activity centers on fish adaptations.	***

			2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.	This activity focuses on fish adaptations. By completing Extension #1 and making sure students note the different habitats the fish live, this PE may be partially met.	*
			3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.		**
			3-LS2-1. Construct an argument that some animals form groups that help members survive.	Modification needed – add behavior card(s) for schooling and shoaling. Define/discuss the adaptive advantages of these behaviors.	*
			3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	When asking students to make inferences about the importance of adaptations, have them consider variations in characteristics among individuals of the same species.	***
			4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Completing the first *In Step with STEM* item will strengthen this PE. Note that this activity focuses on fish and does not meet the PE in regards to plants.	***
Sockeye Scents	103-107	UE (3-5)	3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	This activity centers on the life cycle of the Sockeye Salmon. Adding one or more of the Extensions will strengthen this PE.	***

			4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	This activity has students model Sockeye Salmon using their sense of smell to navigate migration routes.	***
Pond Succession	108-111	MS	MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	This activity develops student understanding of succession. This PE could be met by additionally having students research documented instances of populations affected by succession.	*
Eat and Glow	112-118	HS	HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.	Add to the procedures steps involving discussion of feedback mechanisms and homeostasis. How are the observations of the *Daphnia* in each activity related to these terms?	**
			HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.	Add to discussion with students the process of natural selection and how it relates to their observations of *Daphnia* and brine shrimp.	**
			HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.		***
Biodiversity					

Edge of Home	119-121	UE (3-5) MS	3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.		***
			MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.		***
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	PE met if Extension #3 added.	**
Section 2: Social and Political Knowledge					
Cultural Perspectives					
Mermaids and Manatees	124-127	UE (3-5) MS	None		
Economic, Commercial and Recreational Considerations					
Water We Eating?	128-130	UE (3-5)	4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.	This activity relates to aquatic environments. To meet this PE, Steps 3 and 4 of the procedure must be conducted with Evaluation #3 as well as Extensions 1 and 2 added to strengthen this PE.	**
Net Gain, Net Effect	131-137	MS	MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	Activity has students simulate fishing techniques and interpret the effect of	***

			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	changes in technology on fish populations.	**
			MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.		*
			MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.		***
			MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.		**
Historical and Geographic Development					
Watered-Down History	138-140	MS	None		
Political and Legislative Frameworks					
A Whale of an Issue	141-146	MS, HS	None		
Sea Turtles International	147-157	HS	None		

Section 3: Sustaining Fish and Wildlife Resources					
Attitudes and Awareness					
Water Wings	160-165	UE (3-5) MS	None		
Puddle Wonders!	166-174	MS	MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	Water/puddles/vernal pools are the resource in question of this activity.	***
			MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		***
			MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	This may be met be implementing *In Step with STEM* section.	**
Riparian Retreat	175-179	UE (3-5)	None		
How Wet Is Our Planet?	180-183	MS	None		
Facts and Falsehoods	184-188	MS, HS	MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	The *In Step with STEM* connection relates to this PE.	*
Human Impacts					

Plastic Voyages	189-195	UE (3-5)	None		
Watershed	196-200	MS, HS	None		
What's in the Air?	201-205	MS	MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	This activity provides evidence for how acidic precipitation affects the growth of plants. The genetic factor part of this PE is not addressed in this activity.	***
			MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		***
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	Implement the Extensions to address this PE.	**
			HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	Implement the Extensions to address this PE.	**

			HS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.	This activity has students investigate the effects of acidic precipitation on aquatic life. As is, this activity does not include the mechanical effects of water on Earth materials or investigating properties of water such as heat capacity, density, or the polar nature of its molecular structure.	*
What's in the Water?	206-211	MS	MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		***
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	The *In Step with STEM* connection(s) help meet this PE in regards to aquatic pollution.	**
Something's Fishy Here!	212-215	MS	MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	To meet this PE, implement the *In Step with STEM* connections.	**
Water Works	216-222	UE (3-5) MS	5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	This activity exposes students to the many ways water is used by individuals and communities. Implementing the *In Step with STEM* connection(s) will strengthen the PE link.	***
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.		**

Alice in Waterland	223-227	UE (3-5) MS	5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.		***
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.		**
The Glass Menagerie	228-231	HS	HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.	Incorporating the *In Step with STEM* items when conducting this activity may help meet this PE.	**
			HS-LS2-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.	Add the terms aerobic and anaerobic in discussion with students about the conditions observed in the jars. Also, implement Extension 1.	*
Fishable Waters	232-245	MS, HS	MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		***
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	Add Extension 2 and/or the *In Step with STEM* items to help meet this PE.	**
			HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.		**

			HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.		**
Issues and Trends					
Turtle Hurdles	246-250	UE (3-5) MS	3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Activity focuses on the life cycle of sea turtles.	***
			3-LS2-1. Construct an argument that some animals form groups that help members survive.		*
			3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.		***
			4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	To address this PE, can add having students research structural, behavioral, and/or physiological adaptations of sea turtles.	*
			5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	To address this PE, have students model the food chain/web they witnessed during the activity.	**
			MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.	Activity relates to sea turtles and their reproductive behavior of egg-laying on beaches.	**

			MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	Physical change to the environment in the activity is the "condominiums" that block access to the nesting beach.	***
Aquatic Roots	251-253	LE (K-2), UE (3-5)	2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.	Emphasis is on native vs. non-native plants and animals.	***
			3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.		***
			3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.		***
			5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.		**
Where Have All the Salmon Gone?	254-259	MS, HS	MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	Students interpret and make inferences from actual data on California Chinook Salmon.	***
			HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.		***

			HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.		***
To Dam or Not to Dam	260-263	MS	None	See "Dam Design" for science activity related to dams.	
Aquatic Times	264-265	UE (3-5) MS, HS	None		
Wildlife Management					
Silt: A Dirty Word	266-268	UE (3-5)	3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	The environmental change in this activity is siltation.	***
			3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.		**
Dam Design	269-271	MS, HS	MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		**
			MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.		**

			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.		***
			MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.		***
			MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.		***
			HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.		***
			HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.		**
			HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.		***
			HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.		***

Gone Fishing!	272-278	MS, HS	MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	This activity is an expanded field investigation. To support this performance expectation, students should be guided toward an appropriate question to investigate.	**
			MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	See the *In Step with STEM* items related to lures.	**
			MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.		
			HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.		*
			HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.		***
			HS-LS3-3. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.	If students choose a question to investigate related to traits of the fish they catch, then this performance expectation may be reasonable.	*

			HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.		*
Responsible Action and Service					
Kelp Help	279-281	UE (3-5)	3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.		***
			4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Activity focuses on kelp. Consider implementing Extension #3 as well.	**
			5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.		*
			5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Implement Extension #2 – draw a kelp forest food web.	**
Dragonfly Pond	282-288	UE (3-5) MS	3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.		**
			5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.		**
			MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.		*

Conservation Messaging	289-292	MS, HS	3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.		**
			MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	Activity has students create PSAs to inform on actions to conserve fish and aquatic habitats. Conducting the first *In Step with STEM* item will help achieve this PE.	**
			HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.		***
Living Research: Aquatic Heroes and Heroines	293-295	HS	None		
Working for Wildlife	296-309	MS, HS	None	This activity supports the American School Counselor Association (ASCA) Standards for Students.	