

Aquatic Life Basic
Life Science: Grades 4-8

Enduring Understandings:

1. Understand that water quality impacts aquatic life, which can be an indicator of water quality.
2. Understand that human activity impacts aquatic life.
3. Understand the characteristics of freshwater aquatic ecosystems in Arizona and the semi-arid southwest including: biotic and abiotic factors, food webs, diversity of ecosystems types, species diversity, species adaptations, needs of endangered species, and concerns about invasive species.
4. Understand the ecological and social value of aquatic ecosystems and the benefits of responsible management.
5. Explore political, economic, social, and cultural issues associated with aquatic ecosystems, including loss of habitat.

Enduring Understanding(s)	Concepts	Activities	Arizona Education Standards	Materials Needed
2, 4, 5	A simulation of the movement of water within and between natural and constructed systems. Understanding water's movement on the planet supports water conservation measures.	The Blue Traveler (Discover a Watershed, p. 15)	Science Strand 2: Concept 1, 2 Strand 3: Concept 1, 2 Strand 4: Concept 1 Strand 5: Concept 1 Strand 6: Concept 1-3 Social Studies 3SS-E2 3SS-E7	Provided in kit: 9 Natural system game boards and explanation cards 9 Natural system station cards 19 natural/constructed system game boards and explanation cards 19 natural/constructed system station cards 19 dice <i>Water Journey Map, Part I</i> (one per student) <i>Water Journey Map, Part II</i> (one per student) <i>Water Molecule Movement</i> (one per student)

3	<p>The diversity of wildlife in Arizona is unique and should be celebrated, respected, and conserved.</p> <p>Wildlife has intrinsic value.</p>	<p>Fishy (or Froggy) Who’s Who (Aquatic WILD p. 8)</p>	<p>Language Arts W-E3 LS-E2 VP-E2</p> <p>Science Strand 1: Concept 1-4 Strand 2: Concept 2 Strand 3: Concept 1, 2 Strand 4: Concept 3, 4</p> <p>Social Studies 3SS-E2</p> <p>Math 2M-E1 4M-E1</p>	<p>Native fish of Arizona brochures – OR - Field guides to reptiles and amphibians</p> <p>Provided by school: Arizona maps (1 per each group of 3-5 students)</p> <p>Writing materials</p> <p>Art materials</p>
1, 3, 5	<p>Wildlife responds to its environment through physiological or behavioral adaptations.</p> <p>Changing environmental factors affect wildlife: more specialized organisms are less adaptable and thus less able to survive change.</p>	<p>Blue-Ribbon Niche (Aquatic WILD, p. 52)</p>	<p>Language Arts W-F4</p> <p>Science Strand 1: Concept 1-4 Strand 2: Concept 2 Strand 3: Concept 1, 2 Strand 4: Concept 3, 4 Strand 6: Concept 1</p>	<p>Provided in kit: <u>A Guide to Common Freshwater Invertebrates</u></p> <p>Video: “Rivers Lost”</p> <p>Provided by school: Variety of art materials</p> <p>VCR</p>
3	<p>The five essentials of wildlife habitat are: food, water, shelter, space, and a suitable arrangement.</p> <p>Wildlife responds to its environment through physiological or behavioral adaptations.</p>	<p>Fashion a Fish (Aquatic WILD, p. 56)</p>	<p>Language Arts LS-R5 VP-F2</p> <p>Science Strand 1: Concept 1-4 Strand 2: Concept 2 Strand 3: Concept 1, 2 Strand 4: Concept 3, 4</p> <p>Math 4M-E1</p>	<p>Provided in kit: 2 sets of 20 laminated adaptation cards</p> <p>Provided by school: art materials</p> <p>paper</p>
2, 3, 4, 5	<p>All residents of Arizona interact with wildlife directly and indirectly.</p> <p>The esthetic, economic, and</p>	<p>To Dam or Not to Dam (Aquatic WILD, p. 170)</p>	<p>Language Arts LS-E1 LS-E4 LS-E5</p>	<p>Provided in kit: Role playing cards – 1 set of 30</p> <p>Provided by school: Art materials for creating visuals</p>

	<p>spiritual values humans place on wildlife vary from person to person and culture to culture.</p> <p>Human activities are an important factor affecting plant and animal succession, distribution, and population levels.</p> <p>Humans have at their disposal tools and knowledge to significantly impact the quality and quantity of habitat.</p>		<p>Science Strand 1: Concept 1-4 Strand 2: Concept 2 Strand 3: Concept 1, 2 Strand 4: Concept 3, 4 Strand 6: Concept 1</p> <p>Social Studies 2SS-E7 2SS-P10 3SS-E6 3SS-E7 3SS-E8 3SS-P3 3SS-P4</p>	
1, 2, 3, 4, 5	<p>Responsible environmental actions are the obligations of all levels of society, beginning with the individual.</p> <p>Human activities are an important factor affecting plant and animal succession, distribution, and population levels.</p> <p>Humans have at their disposal tools and knowledge to significantly impact the quality and quantity of wildlife habitat.</p>	Dragonfly Pond (Aquatic WILD, p. 184)	<p>Language Arts VP-E1 VP-E3</p> <p>Science Strand 1: Concept 1-4 Strand 2: Concept 2 Strand 3: Concept 1, 2 Strand 4: Concept 3, 4</p> <p>Social Studies 3SS-E2 3SS-E7 3SS-E8</p>	<p>Art materials</p> <p>Masking tape</p> <p>Copies of dragonfly pond (preferably on blue paper) – one for each group</p> <p>2 copies of <i>Land Use Patterns</i> for each group of students</p>
1,3	<p>Every species has a habitat that is most favorable to its survival.</p> <p>Aquatic organisms vary in their tolerance of different ranges in temperature, dissolved oxygen, salinity, and pH.</p>	Water Quality Windows (HWHP, p. 164-173)	<p>Language Arts R-E1 R-E2 R-E5 W-E1</p> <p>Science Strand 1: Concept 1-4 Strand 2: Concept 2 Strand 3: Concept 1, 2 Strand 4: Concept 3, 4 Strand 6: Concept 1</p> <p>Social Studies 3SS-E2 3SS-E7</p>	<p>Provided in kit: One set of 30 laminated <i>Organism Cards</i> One set of 7 laminated <i>Water Quality Windows Cards</i></p> <p><i>Answer Key Teacher Copy Page</i></p>

1, 2, 3, 5	<p>Macroinvertebrates are an integral part of aquatic ecosystems.</p> <p>Because different species of macroinvertebrates respond differently to a variety of environmental stress factors, their presence and diversity in a body of water can often give a good indication of the general health of that water.</p>	Invertebrates as Indicators (HWHP, p. 174-180)	<p>Science Strand 1: Concept 1-4 Strand 2: Concept 2 Strand 3: Concept 1, 2 Strand 4: Concept 1, 3, 4</p> <p>Social Studies 3SS-E2 3SS-E7</p> <p>Math 1M-E5 2M-E2</p>	<p>Provided in kit: One set of 39 laminated <i>Macroinvertebrate Illustration Cards</i></p> <p>5 Burlap sacks</p> <p>2 copies of data chart</p> <p>2 long jump ropes and 2 short jump ropes for circle outlines</p>
1, 2, 3, 4, 5	<p>Wildlife is a product of habitat.</p> <p>Wildlife responds to its environment through physiological or behavioral adaptations.</p> <p>Changing environmental factors affect wildlife: more specialized organisms are less adaptable and thus less able to survive change.</p> <p>Responsible environmental actions are the obligations of all levels of society, beginning with the individual.</p> <p>Humans have at their disposal tools and knowledge to significantly impact the quality and quantity of wildlife habitat.</p>	Arizona Wildlife Views video segment: “Rivers Lost” – OR – “ <i>Our Native Fish Heritage</i> ”	<p>Language Arts LS-E3 LS-E4</p> <p>Science Strand 1: Concept 3 Strand 2: Concept 2 Strand 3: Concept 1, 2 Strand 4: Concept 3, 4</p> <p>Social Studies 3SS-E2 3SS-E7</p>	<p>Provided in kit: Video: “Rivers Lost” – OR – “<i>Our Native Fish Heritage</i>”</p>