

## Michigan Grade Level Content Expectations

### Ecosystems

#### Science:

- List examples of populations, communities, and ecosystems including the Great Lakes region. **L.EC.06.11**
- Identify the living (biotic) and nonliving (abiotic) components of an ecosystem. **L.EC.06.31**
- Describe how human beings are part of the ecosystem of the Earth and that human activity can purposefully, or accidentally, alter the balance in ecosystems. **L.EC.06.41**

#### Social Studies:

- Explain how and why ecosystems differ as a consequence of differences in latitude, elevation, and human activities. **6 – G3.2.1**
- Identify ecosystems and explain why some are more attractive for humans to use than are others. **6 – G3.2.2**

#### Science:

- Describe the effect humans and other organisms have on the balance of the natural world. **S.RS.04.18, S.RS.05.17, S.RS.06.17**
- Identify organisms as part of a food chain or food web. **L.EC.04.11**
- Explain how environmental changes can produce a change in the food web. **L.EC.04.21.**
- List examples of populations, communities, and ecosystems including the Great Lakes region. **L.EC.06.11**
- Predict how changes in one population might affect other populations based upon their relationships in the food web. **L.EC.06.23**
- Predict possible consequences of overpopulation of organisms, including humans. **L.EC.06.42**
- Classify producers, consumers, and decomposers based on their source of food (the source of energy and building materials). **L.OL.06.51**
- Distinguish between the ways in which consumers and decomposers obtain energy. **L.OL.06.52**

#### Science:

- Design and conduct scientific investigations. **S.IP.04.13, S.IP.05.12, S.IP.06.12**
- Describe the effect humans and other organisms have on the balance of the natural world. **S.RS.04.18, S.RS.05.17, S.RS.06.17**
- Describe how soil is a mixture, made up of weather eroded rock and decomposed organic material. **E.SE.06.13**
- Recognize the need for light to provide energy for the production of carbohydrates, proteins and fats. **LOL.07.61**
- Explain the water cycle and describe how evaporation, transpiration, condensation, cloud formation, precipitation, infiltration, surface runoff, ground water, and absorption occur within the cycle. **E.ES.07.81**
- Classify producers, consumers, and decomposers based on their source of food (the source of energy and building materials.). **L.OL.06.51**
- Distinguish between the ways in which consumers and decomposers obtain energy. **L.OL.06.52**
- Explain that carbon dioxide and water are used to produce carbohydrates, proteins, and fats. **L.OL.07.62**
- Describe evidence that plants make, use and store food. **LOL.07.63**

#### Social Studies:

- Describe the environmental effects of human action on the atmosphere, biosphere, lithosphere, and hydrosphere. **6-G5.1.1**

#### Science:

- Demonstrate scientific concepts through various illustrations, performance models, exhibits, and activities. **S.RS.04.11**
- List examples of populations, communities, and ecosystems including the Great Lakes region. **L.EC.06.11**

#### Social Studies:

- Identify ecosystems and explain why some are more attractive for humans to use than are others. **6 – G3.2.2**

### **Science:**

- Describe the effect humans and other organisms have on the balance of the natural world. **S.RS.04.18, S.RS.05.17, S.RS.06.17**
- Describe how people have contributed to science throughout history and across cultures. **S.RS.04.19**
- Describe how human beings are part of the ecosystem of the Earth and that human activity can purposefully, or accidentally, alter the balance in ecosystems. **L.EC.06.41**

### **Social Studies:**

- Use historical inquiry questions to investigate the development of Michigan’s major economic activities (agriculture, mining, manufacturing, lumbering, tourism, technology, and research) from statehood to present. **4 – H3.0.1**
- Describe how the relationship between the location of natural resources and the location of industries (after 1837) affected and continues to affect the location and growth of Michigan cities. **4 – H3.0.3**
- Draw upon stories, photos, artifacts, and other primary sources to compare the life of people in towns and cities in Michigan and in the Great Lakes region during a variety of time periods from 1837 to the present (e.g., 1837-1900, 1900-1950, 1950-2000). **4 – H3.0.4**
- Describe past and current threats to Michigan’s natural resources; describe how Michigan worked in the past and continues to work today to protect its natural resources. **4 – H3.0.8**
- Create timelines (using decades after 1930) to sequence and describe important events in Michigan history; annotate with connections to the past and impact on the future. **4 – H3.0.9**
- Assess the positive and negative effects of human activities on the physical environment of the United States. **4-C5.01**
- Describe Eastern Woodland American Indian life with respect to governmental and family structures, trade, and views on property ownership and land use. **5 – U1.1.3**
- Use primary and secondary sources to compare Europeans and American Indians who converged in the western hemisphere after 1492 with respect to governmental structure, and views on property ownership and land use. **5 – U1.4.2**
- Explain that communities are affected positively or negatively by changes in technology (e.g., Canada with regard to mining, forestry, hydroelectric power generation, agriculture, snowmobiles, cell phones, air travel). **6 – G2.2.2**
- Explain how and why ecosystems differ as a consequence of differences in latitude, elevation, and human activities. **6-G3.2.1**
- Describe the environmental effects of human action on the atmosphere (air), biosphere (people, animals, and plants), lithosphere (soil), and hydrosphere (water). **6 – G5.1.1**
- Describe how variations in technology affect human modifications of the landscape (e.g., clearing forests for agricultural land in South America, fishing in the Grand Banks of the Atlantic, expansion of cities in South America, hydroelectric developments in Canada, Brazil and Chile, and mining the Kentucky and West Virginia). **6 – G5.1.2**
- Identify the role of the individual in history and the significance of one person’s ideas. **6-H.1.2.5**

## **Biodiversity**

### **Science:**

- Demonstrate scientific concepts through various illustrations, performance models, exhibits, and activities. **S.RS.04.11**
- Describe the effect humans and other organisms have on the balance in the natural world. **S.RS.05.17**
- List examples of populations, communities, and ecosystems including the Great Lakes region. **L.EC.06.11**
- Predict how changes in one population might affect other populations based upon their relationships in the food web. **L.EC.06.23**
- Describe how human beings are part of the ecosystem of the Earth and that human activity can purposefully, or accidentally, alter the balance in ecosystems. **L.EC.06.41**

### **Social Studies:**

- Explain how and why ecosystems differ as a consequence of differences in latitude, elevation, and human activities. **6 – G3.2.1**

### **Science:**

- Make purposeful observation of the natural world using the appropriate senses. **S.IP.04.11**
- Design and conduct scientific investigations. **S.IP.04.13, S.IP.05.12, S.IP.06.12**
- Use tools and equipment appropriate to scientific investigations. **S.IP.04.14, S.IP.05.13, S.IP.06.13**
- Use evidence when communicating scientific ideas. **S.RS.04.15**
- Describe the effect humans and other organisms have on the balance of the natural world. **S.RS.04.18, S.RS.05.17, S.RS.06.17**
- Identify the need for evidence in making scientific decisions. **S.RS.05.13, S.RS.06.13**
- Communicate and defend findings of observations and investigation using evidence. **S.IA.05.13, S.IA.06.13**
- Draw conclusions from sets of data from multiple trials of a scientific investigation. **S.IA.05.14, S.IA.06.14**

### **Social Studies:**

- Write persuasive/argumentative essays expressing and justifying decisions on public policy issues. **4 – P3.3.1, 5- P3.3**
- Participate in projects to help or inform others. **4 – P4.2.2, 5 – P4.2.2, 6 – P4.2.3**
- Explain how and why ecosystems differ as a consequence of differences in latitude, elevation, and human activities. **6 – G3.2.1**

**Science:**

- Describe the effect humans and other organisms have on the balance of the natural world. **S.RS.04.18, S.RS.05.17, S.RS.06.17**
- Identify the factors in an ecosystem that influence changes in population size. **L.EC.06.32**
- Describe how human beings are part of the ecosystem of the Earth and that human activity can purposefully, or accidentally, alter the balance in ecosystems. **L.EC.06.41**
- Predict possible consequences of overpopulation of organisms, including humans, (for example: species extinction, resource depletion, climate change, pollution). **L.EC.06.42**

**Social Studies:**

- Describe ways citizens can work together to promote the values and principles of American democracy. **4-CS.04**
- Assess the positive and negative effects of human activities on the physical environment of the United States. **4 – G5.0.1**
- Describe past and current threats to Michigan’s natural resources; describe how Michigan worked in the past and continues to work today to protect its natural resources. **4 – H3.0.8**
- Create timelines (using decades after 1930) to sequence and describe important events in Michigan history; annotate with connections to the past and impact on the future. **4 – H3.0.9**
- Explain how and why ecosystems differ as a consequence of differences in latitude, elevation, and human activities. **6-G3.2.1**
- Describe the environmental effects of human action on the atmosphere (air), biosphere (people, animals, and plants), lithosphere (soil), and hydrosphere (water). **6 – G5.1.1**
- Describe how variations in technology affect human modifications of the landscape. **6 – G5.1.2**
- Identify the ways in which human-induced changes in the physical environment in one place can cause changes in other places. **6 – G5.1.3**
- Identify the role of the individual in history and the significance of one person’s ideas. **6-H.1.2.5**

**8****Science:**

- Describe the effect humans and other organisms have on the balance of the natural world. **S.RS.04.18, S.RS.05.17, S.RS.06.17**
- Explain how environmental changes can produce a change in the food web. **L.EC.04.21**
- Describe how human beings are part of the ecosystem of the Earth and that human activity can purposefully, or accidentally, alter the balance in ecosystems. **L.EC.06.41**
- Predict possible consequences of overpopulation of organisms, including humans. **L.EC.06.42**

**Social Studies:**

- Describe past and current threats to Michigan’s natural resources; describe how Michigan worked in the past and continues to work today to protect its natural resources. **4 – H3.0.8**
- Explain how and why ecosystems differ as a consequence of differences in latitude, elevation, and human activities. **6-G3.2.1**

**9****Science:**

- Describe the effect humans and other organisms have on the balance of the natural world. **S.RS.04.18, S.RS.05.17, S.RS.06.17**
- Analyze the relationship of environmental change and catastrophic events (for example: volcanic eruption, floods, asteroid impacts, tsunami) to species extinction. **L.EV.05.14**
- Describe how human beings are part of the ecosystem of the Earth and that human activity can purposefully, or accidentally, alter the balance in ecosystems. **L.EC.06.41**
- Predict possible consequences of overpopulation of organisms, including humans. **L.EC.06.42**

**Social Studies:**

- Participate in projects to help or inform others. **4 – P4.2.2, 5 – P4.2.2, 6 – P4.2.3**
- Conduct research on contemporary global topics and issues, compose persuasive essays, and develop a plan for action. **6 – G6.1.1**

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## Michigan Grade Level Content Expectations Correlation for Ecosystems & Biodiversity Unit

X- Addresses/Supports

	1. Ecosystem Basics	2. It's All Connected!	3. Nature's Recycling! (Parts A, B, and C)	4. Michigan Ecosystems: What have they done for you lately?	5. Michigan Time Machine	6. Michigan's Web of Life	7. Biodiversity Survey	8. Threats and Protections to Michigan Biodiversity	9. Most Unwanted: Invaders of the Great Lakes Region	10. Michigan's Threatened Species
<b>S.IA.05.13, S.IA.06.13</b> Communicate and defend findings of observations and investigation using evidence.							X			
<b>S.IA.05.14, S.IA.06.14</b> Draw conclusions from sets of data from multiple trials of a scientific investigation.							X			
<b>S.IP.04.11</b> Make purposeful observation of the natural world using the appropriate senses.						X				
<b>S.IP.04.13, S.IP.05.12, S.IP.06.12</b> Design and conduct scientific investigations.			X			X				
<b>S.IP.04.14, S.IP.05.13, S.IP.06.13</b> Use tools and equipment appropriate to scientific investigations.							X			
<b>S.RS.04.11</b> Demonstrate scientific concepts through various illustrations, performance models, exhibits, and activities.				X		X				
<b>S.RS.04.15</b> Use evidence when communicating scientific ideas.							X			
<b>S.RS.04.18, S.RS.05.17, S.RS.06.17</b> Describe the effect humans and other organisms have on the balance of the natural world.		X	X		X	X	X	X	X	X
<b>S.RS.04.19</b> Describe how people have contributed to science throughout history and across cultures.					X					
<b>S.RS.05.13, S.RS.06.13</b> Identify the need for evidence in making scientific decisions.							X			
<b>E.ES.07.81</b> Explain the water cycle and describe how evaporation, transpiration, condensation, cloud formation, precipitation, infiltration, surface runoff, ground water, and absorption occur within the cycle.			X							
<b>E.SE.06.13</b> Describe how soil is a mixture, made up of weather eroded rock and decomposed organic material.			X							
<b>L.EC.04.11</b> Identify organisms as part of a food chain or food web.		X								
<b>L.EC.04.21</b> Explain how environmental changes can produce a change in the food web.		X							X	
<b>L.EC.06.11</b> List examples of populations, communities, and ecosystems including the Great Lakes region.	X	X		X		X				
<b>L.EC.06.23</b> Predict how changes in one population might affect other populations based upon their relationships in the food web.		X				X				

**SCIENCE**

<b>Michigan Grade Level Content Expectations (Continued)</b> <b>Correlation for Ecosystems &amp; Biodiversity Unit</b> X- Addresses/Supports		Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10	
<b>SCIENCE</b>	L.EC.06.23 Predict how changes in one population might affect other populations based upon their relationships in the food web.		X				X					
	L.EC.06.31 Identify the living (biotic) and nonliving (abiotic) components of an ecosystem.	X										
	L.EC.06.32 Identify the factors in an ecosystem that influence changes in population size.								X			
	L.EC.06.41 Describe how human beings are part of the ecosystem of the Earth and that human activity can purposefully, or accidentally, alter the balance in ecosystems.	X					X	X	X	X	X	
	L.EC.06.42 Predict possible consequences of overpopulation of organisms, including humans.		X						X	X	X	
	L.EV.05.14 Analyze the relationship of environmental change and catastrophic events (for example: volcanic eruption, floods, asteroid impacts, tsunami) to species extinction.											X
	L.OL.06.51 Classify producers, consumers, and decomposers based on their source of food (the source of energy and building materials).		X	X								
	L.OL.06.52 Distinguish between the ways in which consumers and decomposers obtain energy.		X	X								
	LOL.07.61 Recognize the need for light to provide energy for the production of carbohydrates, proteins and fats.				X							
	LOL.07.62 Explain that carbon dioxide and water are used to produce carbohydrates, proteins, and fats.				X							
LOL.07.63 Describe evidence that plants make, use and store food.				X								
<b>SOCIAL STUDIES</b>	4-CS.04 Describe ways citizens can work together to promote the values and principles of American democracy.								X			
	4 – G5.0.1 Assess the positive and negative effects of human activities on the physical environment of the United States.								X			
	4 – H3.0.1 Use historical inquiry questions to investigate the development of Michigan’s major economic activities (agriculture, mining, manufacturing, lumbering, tourism, technology, and research) from statehood to present.						X					
	4 – H3.0.3 Describe how the relationship between the location of natural resources and the location of industries (after 1837) affected and continues to affect the location and growth of Michigan cities.						X					
	4 – H3.0.4 Draw upon stories, photos, artifacts, and other primary sources to compare the life of people in towns and cities in Michigan and in the Great Lakes region during a variety of time periods from 1837 to the present (e.g., 1837-1900, 1900-1950, 1950-2000).						X					
	4 – H3.0.8 Describe past and current threats to Michigan’s natural resources; describe how Michigan worked in the past and continues to work today to protect its natural resources.						X				X	

<b>Michigan Grade Level Content Expectations (Continued) Correlation for Ecosystems &amp; Biodiversity Unit</b>		Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10
X- Addresses/Supports											
	4 – H3.0.9 Create timelines (using decades after 1930) to sequence and describe important events in Michigan history; annotate with connections to the past and impact on the future.					X			X		
	4-C5.01 Assess the positive and negative effects of human activities on the physical environment of the United States.					X					
	4 – P3.3.1, 5- P3.3 Write persuasive/argumentative essays expressing and justifying decisions on public policy issues.							X			X
	4 – P4.2.2, 5 – P4.2.2, 6 – P4.2.3 Participate in projects to help or inform others.										
	5 – U1.1.3 Describe Eastern Woodland American Indian life with respect to governmental and family structures, trade, and views on property ownership and land use.					X					
	5 – U1.4.2 Use primary and secondary sources to compare Europeans and American Indians who converged in the western hemisphere after 1492 with respect to governmental structure, and views on property ownership and land use.					X					
	6 – G2.2.2 Explain that communities are affected positively or negatively by changes in technology (e.g., Canada with regard to mining, forestry, hydroelectric power generation, agriculture, snowmobiles, cell phones, air travel).					X					
	6 – G3.2.1 Explain how and why ecosystems differ as a consequence of differences in latitude, elevation, and human activities.	X					X	X	X	X	
	6 – G3.2.2 Identify ecosystems and explain why some are more attractive for humans to use than are others.	X					X				
	6-G5.1.1 Describe the environmental effects of human action on the atmosphere (air), biosphere (people, animals, and plants), lithosphere (soil), and hydrosphere (water).			X		X			X		
	6 – G5.1.2 Describe how variations in technology affect human modifications of the landscape (e.g., clearing forests for agricultural land in South America, fishing in the Grand Banks of the Atlantic, expansion of cities in South America, hydroelectric developments in Canada, Brazil and Chile, and mining the Kentucky and West Virginia).					X			X		
	6 – G5.1.3 Identify the ways in which human-induced changes in the physical environment in one place can cause changes in other places.								X		
	6 – G6.1.1 Conduct research on contemporary global topics and issues, compose persuasive essays, and develop a plan for action.										X
	6-H.1.2.5 Identify the role of the individual in history and the significance of one person's ideas.					X					X

## SOCIAL STUDIES