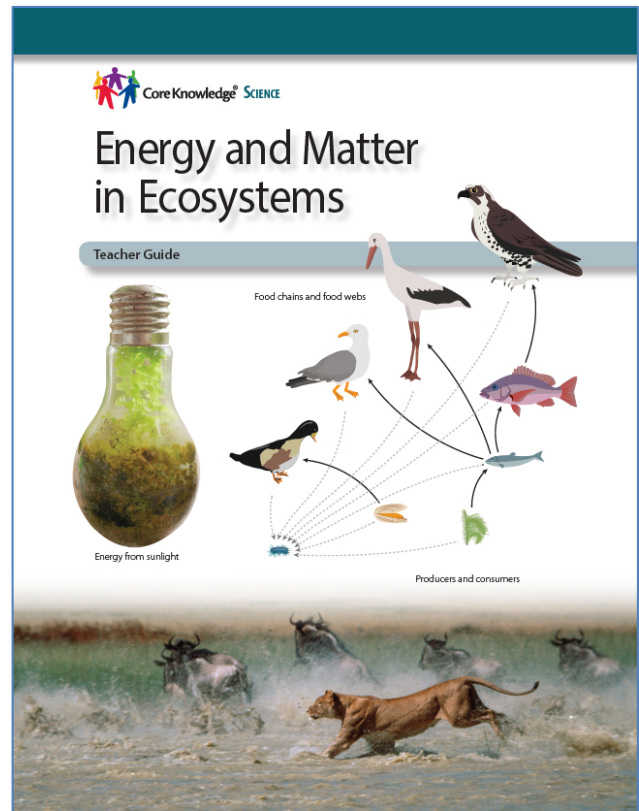


Energy and Matter in Ecosystems

Click on each lesson to access its online resources. Page numbers refer to pages in the Teacher Guide. Some links provide access to files created by the Core Knowledge Foundation, including PDF documents that you can download and view with the appropriate software (such as [Adobe Reader](#)).

| | |
|--------------------------------|--|
| | About This Unit |
| Part A | Lesson 1 |
| | Lesson 2 |
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Extend and customize this unit for your students using the [CKSci Additional Activities](#)

About This Unit

| Page | Resource Links |
|------|---|
| 1 | <p>Note to Teachers and Curriculum Planners</p> <p>The learning progressions of Disciplinary Core Idea PS3.D Energy in Chemical Processes and Everyday Life; LS1.C: Organization for Matter and Energy Flow in Organisms; LS2.A: Interdependent Relationships in Ecosystems; and LS2.B: Cycles of Matter and Energy Transfer in Ecosystems offer guidance regarding the scope and sequence of learning about [topic] in the elementary grades and beyond.</p> <ul style="list-style-type: none"> Learn more about these core ideas and their related content by reading the corresponding section of <i>A Framework for K-12 Science Education</i>: pg. 128-130, 147-148, 150-154. <p>See also the Teachers Resources section of this guide.</p> |
| 2 | <p>Notes to Core Knowledge Teachers: 2019 Core Knowledge Science Sequence for this unit: Domain—Energy and Matter in Ecosystems</p> <p>CKSci correlations to the 2010 Core Knowledge Sequence:</p> <ul style="list-style-type: none"> GRADE 3 GRADE 4 GRADE 5 |
| 3 | <p>This unit has been informed by the following Next Generation Science Standards (NGSS) Performance Expectations:</p> <p>Topic— 5. Matter and Energy in Organisms and Ecosystems</p> <ul style="list-style-type: none"> 5-PS3-1 5-LS1-1 5-LS2-1 |
| 10 | Resources for Effective and Safe Classroom Activities |
| 11 | Materials Supply List: Grade 5 Unit 2 Energy and Matter in Ecosystems |
| 15 | Pacing Guides for CKSci Grades 3–5 |

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Part A: Organisms Need and Use Energy

Lesson 1

| Page | Resource Links |
|------|---|
| 19 | Disciplinary Core Idea: PS3.D <i>Energy in Chemical Processes and Everyday Life</i> <ul style="list-style-type: none"> From the Framework: pg. 128-130 |
| | Disciplinary Core Idea: LS1.C <i>Organization for Matter and Energy Flow in Organisms</i> <ul style="list-style-type: none"> From the Framework: pg. 147-148 |
| | Crosscutting Concept: <i>Energy and Matter</i> <ul style="list-style-type: none"> From the Framework: Page 94-96 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> From the Framework: Page 56-59 |

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Lesson 2

| Page | Resource Links |
|------|---|
| 26 | Disciplinary Core Idea: PS3.D <i>Energy in Chemical Processes and Everyday Life</i> <ul style="list-style-type: none"> From the Framework: pg. 128-130 |
| | Disciplinary Core Idea: LS1.C <i>Organization for Matter and Energy Flow in Organisms</i> <ul style="list-style-type: none"> From the Framework: pg. 147-148 |
| | Crosscutting Concept: <i>Energy and Matter</i> <ul style="list-style-type: none"> From the Framework: Page 94-96 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> From the Framework: Page 56-59 |

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Lesson 3

| Page | Resource Links |
|------|---|
| 34 | Disciplinary Core Idea: PS3.D <i>Energy in Chemical Processes and Everyday Life</i> <ul style="list-style-type: none"> From the Framework: pg. 128-130 |
| | Disciplinary Core Idea: LS1.C <i>Organization for Matter and Energy Flow in Organisms</i> <ul style="list-style-type: none"> From the Framework: pg. 147-148 |
| | Crosscutting Concept: <i>Energy and Matter</i> <ul style="list-style-type: none"> From the Framework: Page 94-96 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> From the Framework: Page 56-59 |
| 34 | <ul style="list-style-type: none"> Photosynthesis: Video |

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Lesson 4

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|------|---|
| 40 | Disciplinary Core Idea: PS3.D <i>Energy in Chemical Processes and Everyday Life</i> <ul style="list-style-type: none"> From the Framework: pg. 128-130 |
| | Disciplinary Core Idea: LS1.C <i>Organization for Matter and Energy Flow in Organisms</i> <ul style="list-style-type: none"> From the Framework: pg. 147-148 |
| | Crosscutting Concept: <i>Energy and Matter</i> <ul style="list-style-type: none"> From the Framework: Page 94-96 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> From the Framework: Page 56-59 |

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Part B: Plants and Animals

Lesson 5

| Page | Resource Links |
|------|---|
| 48 | Disciplinary Core Idea: <i>LS1.C Organization for Matter and Energy Flow in Organisms</i> <ul style="list-style-type: none"> From the Framework: pg. 147-148 |
| | Crosscutting Concept: <i>Energy and Matter</i> <ul style="list-style-type: none"> From the Framework: Page 94-96 |
| | Science and Engineering Practices: <i>Engaging in Argument from Evidence</i> <ul style="list-style-type: none"> From the Framework: Bottom of pg. 71-74 |

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Lesson 6

| Page | Resource Links |
|------|---|
| 53 | Disciplinary Core Idea: LS1.C <i>Organization for Matter and Energy Flow in Organisms</i> <ul style="list-style-type: none"> From the Framework: pg. 147-148 |
| | Crosscutting Concept: <i>Energy and Matter</i> <ul style="list-style-type: none"> From the Framework: Page 94-96 |
| | Science and Engineering Practices: <i>Engaging in Argument from Evidence</i> <ul style="list-style-type: none"> From the Framework: Bottom of pg. 71-74 |

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Lesson 7

| Page | Resource Links |
|------|---|
| 59 | Disciplinary Core Idea: <i>LS1.C Organization for Matter and Energy Flow in Organisms</i> <ul style="list-style-type: none"> From the Framework: pg. 147-148 |
| | Crosscutting Concept: <i>Energy and Matter</i> <ul style="list-style-type: none"> From the Framework: Page 94-96 |
| | Science and Engineering Practices: <i>Engaging in Argument from Evidence</i> <ul style="list-style-type: none"> From the Framework: Bottom of pg. 71-74 |

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Lesson 8

| Page | Resource Links |
|------|---|
| 64 | Disciplinary Core Idea: <i>LS1.C Organization for Matter and Energy Flow in Organisms</i> <ul style="list-style-type: none"> From the Framework: pg. 147-148 |
| | Crosscutting Concept: <i>Energy and Matter</i> <ul style="list-style-type: none"> From the Framework: Page 94-96 |
| | Science and Engineering Practices: <i>Engaging in Argument from Evidence</i> <ul style="list-style-type: none"> From the Framework: Bottom of pg. 71-74 |

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Lesson 9

| Page | Resource Links |
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| 70 | Disciplinary Core Idea: <i>LS1.C Organization for Matter and Energy Flow in Organisms</i> <ul style="list-style-type: none"> From the Framework: pg. 147-148 |
| | Crosscutting Concept: <i>Energy and Matter</i> <ul style="list-style-type: none"> From the Framework: Page 94-96 |
| | Science and Engineering Practices: <i>Engaging in Argument from Evidence</i> <ul style="list-style-type: none"> From the Framework: Bottom of pg. 71-74 |

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Part C: Matter Cycles Through Ecosystems

Lesson 10

| Page | Resource Links |
|------|---|
| 80 | Disciplinary Core Idea: LS2.A <i>Interdependent Relationships in Ecosystems</i> <ul style="list-style-type: none"> From the Framework: pg. 150-152 |
| | Crosscutting Concept: <i>System and System Models</i> <ul style="list-style-type: none"> From the Framework: Page 91-94 |
| | Crosscutting Concept: <i>Scale, Proportion, and Quantity</i> <ul style="list-style-type: none"> From the Framework: Page 89-91 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> From the Framework: Page 56-59 |
| 81 | [video option] Types of Ecosystems |
| 85 | [video option] Hawaiian island ecosystem |

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Lesson 11

| Page | Resource Links |
|------|---|
| 88 | Disciplinary Core Idea: LS2.A <i>Interdependent Relationships in Ecosystems</i> <ul style="list-style-type: none"> From the Framework: pg. 150-152 |
| | Disciplinary Core Idea: LS2.B <i>Cycles of Matter and Energy Transfer in Ecosystems</i> <ul style="list-style-type: none"> From the Framework: pg. 152-154 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> From the Framework: Page 56-59 |
| | Crosscutting Concept: <i>Scale, Proportion, and Quantity</i> <ul style="list-style-type: none"> From the Framework: Page 89-91 |
| | Crosscutting Concept: <i>System and System Models</i> <ul style="list-style-type: none"> From the Framework: Page 91-94 |

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Lesson 12

| Page | Resource Links |
|------|---|
| 92 | Performance Expectation: <ul style="list-style-type: none"> • 5-LS2-1 • Evidence Statements for 5-LS2-1 |
| | Disciplinary Core Idea: LS2.A <i>Interdependent Relationships in Ecosystems</i> <ul style="list-style-type: none"> • From the Framework: pg. 150-152 |
| | Crosscutting Concept: <i>System and System Models</i> <ul style="list-style-type: none"> • From the Framework: Page 91-94 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> • From the Framework: Page 56-59 |
| 94 | [video option] Eagles hunting |
| 98 | [video option] Food web |

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Lesson 13

| Page | Resource Links |
|------|---|
| 100 | Performance Expectation: <ul style="list-style-type: none"> • 5-LS2-1 • Evidence Statements for 5-LS2-1 |
| | Disciplinary Core Idea: LS2.A <i>Interdependent Relationships in Ecosystems</i> <ul style="list-style-type: none"> • From the Framework: pg. 150-152 |
| | Crosscutting Concept: <i>System and System Models</i> <ul style="list-style-type: none"> • From the Framework: Page 91-94 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> • From the Framework: Page 56-59 |
| 101 | [video option] Everglades Food Chain |

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Lesson 14

| Page | Resource Links |
|------|---|
| 107 | Disciplinary Core Idea: LS2.A <i>Interdependent Relationships in Ecosystems</i> <ul style="list-style-type: none"> From the Framework: pg. 150-152 |
| | Crosscutting Concept: <i>System and System Models</i> <ul style="list-style-type: none"> From the Framework: Page 91-94 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> From the Framework: Page 56-59 |
| 112 | [video options] Deforestation Human effects on ecosystems |

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Lesson 15

| Page | Resource Links |
|------|---|
| 114 | Disciplinary Core Idea: LS2.A <i>Interdependent Relationships in Ecosystems</i> <ul style="list-style-type: none"> From the Framework: pg. 150-152 |
| | Disciplinary Core Idea: LS2.B <i>Cycles of Matter and Energy Transfer in Ecosystems</i> <ul style="list-style-type: none"> From the Framework: pg. 152-154 |
| | Crosscutting Concept: <i>Scale, Proportion, and Quantity</i> <ul style="list-style-type: none"> From the Framework: Page 89-91 |
| | Crosscutting Concept: <i>System and System Models</i> <ul style="list-style-type: none"> From the Framework: Page 91-94 |
| | Science and Engineering Practices: <i>Developing and Using Models</i> <ul style="list-style-type: none"> From the Framework: Page 56-59 |

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Online Resources

Unit Review and Assessment

UR Lesson

| Page | Resource Links |
|------|--|
| 120 | NGSS Performance Expectations addressed by this unit: Topic— 5. Matter and Energy in Organisms and Ecosystems <ul style="list-style-type: none">• 5-PS3-1• 5-LS1-1• 5-LS2-1 |

Culminating Unit Assessment

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| 161 | Unit Assessment Teacher Evaluation Guide |

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Teacher Resources

| Page | Resource Links |
|------|--|
| 11 | Resources for Effective and Safe Classroom Activities |
| 12 | Materials Supply List: Grade 5 Unit 2 Energy and Matter in Ecosystems |
| 158 | Activity Pages Answer Key |
| 161 | Unit Assessment: Teacher Evaluation Guide |
| | Safety in the Science Classroom: <ul style="list-style-type: none"> • NSTA Safety Resources • Safety Resources for Elementary Teachers (See also Appendix B below) |
| | Teacher Guide Appendices: <ul style="list-style-type: none"> • Appendix A -- Glossary • Appendix B -- Classroom Safety for Activities and Demonstrations • Appendix C -- Strategies for Acquiring Materials • Appendix D -- Advance Preparation for Activities and Demonstrations • Appendix E -- What to Do When Activities Don't Give Expected Results |

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