

# Ecology and Ecosystems Unit

- **Covers: Ecosystems, Biomes, Energy Flow in Ecosystems, Food Webs, Biodiversity, and Invasive Species**
- **Lesson & Engaging Activities**
- **Daily Teaching Schedule**



# Ecology and Ecosystems



## Unit - Main Topics

- Ecosystems
- Biomes
- Energy Flow in Ecosystems and Food Webs
- Biodiversity and Invasive Species

## Includes:

- 5 Lessons & 18 Activities

## Includes: Ecosystems

- Ecosystems and Sustainability
- Abiotic/Biotic Factors
- Population and Community

## Includes: Biomes

- Biomes Basics
- Major and Minor Biomes

## Includes: Energy Flow in Ecosystems and Food Webs

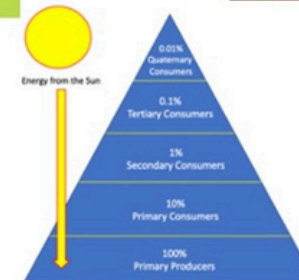
- Photosynthesis and Cellular Respiration
- Ecological Niche
- Producers & Consumers
- Herbivores, Omnivores, Carnivores, and Scavengers
- Trophic Levels, Food Chains, and Food Webs
- Ecological Pyramids

## Includes: Biodiversity and Invasive Species

- Biodiversity
- Vulnerable, Threatened, Extirpated, Endangered, and Extinct species
- Keystone species
- Species extinction and biodiversity



Process of Photosynthesis



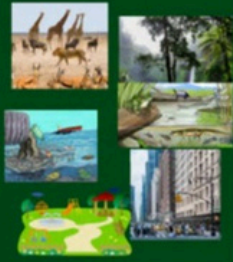
Decomposers feed at each level



# Lessons Include Teacher and Student Versions - Videos Embedded in Lessons

## Ecosystems

- Ecosystems
- Abiotic/Biotic
- Population
- Community
- Ecosystem Recycling
- Describing Ecosystems
- Sustainability
- Human Impacts



Google Slides and PowerPoint Versions Included  
Google Classroom Ready

## Biomes of the World

- Biome Basics
- Major Biome Types
  - Aquatic, Grassland, Forest, Desert, Tundra
- Biome Subtypes
  - Freshwater, Marine, Savanna, Tropical rainforest, Temperate rainforest
- Plants and Animals of each biome



TWIF

## Teacher and Student Versions of the presentation

3. Reduce the Beauty or Use of the Land

- Invasive species reduce the water quality and beauty of the landscape.
- This will negatively impact wildlife viewing.
- Various invasive species can also prevent the enjoyment of natural activities such as swimming and boating.
- Example: The Asian Carp



## Energy Flow In Ecosystems

- Photosynthesis
- Cellular Respiration
- Ecological Niche
- Producers & Consumers
- Herbivores, Omnivores & Carnivores
- Scavenger
- Food Chain
- Trophic Levels
- Food Webs
- Ecological Pyramids



## The Importance of Biodiversity

- Biodiversity
- The need for biodiversity
- Vulnerable, Threatened, Extirpated, Endangered, and Extinct species
- Keystone species
- Species extinction and biodiversity
- Natural and human causes of extinction



Google Slides and PowerPoint Versions Included  
Google Classroom Ready

## Aquatic Biomes

- Aquatic biomes include both freshwater and marine biomes
- Freshwater biomes have very little salt and include lakes, rivers, and ponds




Videos embedded directly into the slides. One-click access

## Invasive Species

- Invasive vs. Native Species
- The Effect of an Invasive Species on an Ecosystem
- The Small Asian Mongoose
- Controlling Invasive Species
- 5 Extreme Invasive Species



Google Slides and PowerPoint Versions Included  
Google Classroom Ready

## Google Access

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Click here to place a copy of your resources into your Google account



Google Classroom Ready  
One-Click Google Slides Access

# Engaging Activities

### Device-Based Scavenger Hunt Invasive Species

Includes

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks and laptops

- 100% Digital
- Simulations
- Quizzes
- Videos
- Games
- Word Scramble

### Device-Based Scavenger Hunt Energy Flow In Ecosystems

Includes

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks and laptops

- 100% Digital
- Simulations
- Quizzes
- Videos
- Games
- Word Scramble

### Device-Based Scavenger Hunt Biodiversity

Includes

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks, and laptops

- 100% Digital
- Simulations
- Quizzes
- Videos
- Games

### Bill Nye The Science Guy Biodiversity

Two Versions

- With and without a Word Bank
- Fully Editable
- Answer Key

### Bill Nye The Science Guy FOOD WEBS

Two Versions

- With and without a Word Bank
- Fully Editable
- Answer Key

### Energy Flow In Ecosystems Lab Station Activity

7 Lab Station Activities to get your kids out of their seats and engaged in their learning

### Biomes Lab Station Activity

7 Lab Station Activities to get your kids out of their seats and engaged in their learning

### Biomes Word Search and Scramble

THREE Activities in One!

1. Basic 25-Term Word Search
2. Scrambled Words Word Search
3. Word Scramble and Define Activity

### Device-Based Scavenger Hunt Biomes

Includes

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks and laptops

- 100% Digital
- Simulations
- Quizzes
- Videos
- Games

### Invasive Species Scientific Reading Comprehension Article

Improve your students' Scientific Analysis Skills, use as an Emergency Substitute Plan, or create Applicability in your classroom

### Human Impact on Ecosystems Inquiry Lab Experiment

Let your kids explore the scientific method with a hands-on Ecosystem Lab

Includes

- Full task overview with pictures
- Description of lab report components
- Scaffold your students' learning
- Have your kids learn to design and carry out an experiment
- Complete rubric marking scheme
- Teaching and student versions in Word, Google, and PDF formats

### Ecosystems Lab Station Activity

7 Lab Station Activities to get your kids out of their seats and engaged in their learning

### Ecosystems Scientific Reading Comprehension Article and Extension Activity

Improve your students' Literacy and Analysis Skills, use as an Emergency Substitute Plan, or create Applicability in your classroom

### Human Impact on Ecosystems Inquiry Assignment

Acid Rain Formations

### Human Impact on Ecosystems Inquiry Assignment

Acid Rain Formations

### Biodiversity & Invasive Species

25 DIGITAL TASK CARDS

Boom Learning is an Academics' Choice Awards™ Smart Media award winner

### Ecosystems

25 DIGITAL TASK CARDS

Boom Learning is an Academics' Choice Awards™ Smart Media award winner

# Daily Teaching Schedule

## UNIT— Ecology and Ecosystems 26-29 DAYS TOTAL

### Ecosystems – 7-9 days

| Number of Day(s) | Course Content                                                                                                                                                                     | Teaching Resources                             | NGSS                                                                 |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------|
| 1                | <ul style="list-style-type: none"> <li>Ecosystems</li> <li>Abiotic/Biotic</li> <li>Population</li> <li>Community</li> <li>Describing Ecosystems</li> <li>Sustainability</li> </ul> | Ecosystems - Lesson                            | HS-LS2-1<br>HS-LS2-2<br>HS-LS2-3<br>HS-LS2-4<br>HS-LS2-5<br>HS-LS2-6 |
| 1                | Hands-on review activity                                                                                                                                                           | Ecosystems - 7 Engaging Lab Station Activities | HS-LS2-7<br>HS-LS2-8                                                 |
| 1                | Review activity                                                                                                                                                                    | Ecosystems - Science Reading Article           | HS-LS4-5                                                             |
| 2-3              | Hands-on review project                                                                                                                                                            | Huma                                           |                                                                      |
| 2-3              | Hands-on review project                                                                                                                                                            | Huma                                           |                                                                      |
| Assessments      | There are multiple assessments included throughout this unit                                                                                                                       |                                                |                                                                      |

### Biomes – 5 days

| Number of Day(s) | Course Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Teaching Resources                                                     | NGSS                                                     |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------|
| 2                | <ul style="list-style-type: none"> <li>Biome Basics</li> <li>Major Biome Types               <ul style="list-style-type: none"> <li>Aquatic</li> <li>Grassland</li> <li>Forest</li> <li>Desert</li> <li>Tundra</li> </ul> </li> <li>Biome Subtypes               <ul style="list-style-type: none"> <li>Freshwater</li> <li>Marine</li> <li>Savanna</li> <li>Tropical rainforest</li> <li>Temperate rainforest</li> </ul> </li> <li>Plants and Animals of Each Biome</li> </ul> | Biomes of the Earth Lesson - Google Slides and Distance Learning Ready | HS-LS2-1<br>HS-LS2-2<br>HS-LS2-6<br>HS-LS4-5<br>HS-LS4-6 |
| 1                | Hands-on review activity                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Biomes – A Digital Scavenger Hunt Activity                             |                                                          |
| 1                | Hands-on review activity                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Biomes - Lab Station Activity                                          |                                                          |
| 1                | Review activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Biomes Word Search and Scramble Activity                               |                                                          |

### Energy Flow in Ecosystems and Food Webs – 6 days

| Number of Day(s) | Course Content                                                                                                                                                                                                                                                                                                             | Teaching Resources                                                         | NGSS                             |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------|
| 3                | <ul style="list-style-type: none"> <li>Photosynthesis</li> <li>Cellular Respiration</li> <li>Ecological Niche</li> <li>Producers &amp; Consumers</li> <li>Herbivores, Omnivores &amp; Carnivores</li> <li>Scavenger</li> <li>Food Chain</li> <li>Trophic Levels</li> <li>Food Webs</li> <li>Ecological Pyramids</li> </ul> | Energy Flow in Ecosystems Lesson - Google Slides & Distance Learning Ready | HS-LS1-5<br>HS-LS1-6<br>HS-LS1-7 |
| 1                | Hands-on review activity                                                                                                                                                                                                                                                                                                   | Energy Activi                                                              |                                  |
| 1                | Hands-on review activity                                                                                                                                                                                                                                                                                                   | Energy Scave                                                               |                                  |
| 1                | Review activity                                                                                                                                                                                                                                                                                                            | Ecosys and/o Video                                                         |                                  |
| Assessments      | There are multiple assessments included throughout this unit                                                                                                                                                                                                                                                               |                                                                            |                                  |

d throughout this unit portion.

### Biodiversity and Invasive Species – 8-9 days

| Number of Day(s) | Course Content                                                                                                                                                                                                                                                                                        | Teaching Resources                                                          | NGSS                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------|
| 1-2              | <ul style="list-style-type: none"> <li>Biodiversity</li> <li>The need for biodiversity</li> <li>Vulnerable, Threatened, Extirpated, Endangered, and Extinct species</li> <li>Keystone species</li> <li>Species extinction and biodiversity</li> <li>Natural and human causes of extinction</li> </ul> | The Importance of Biodiversity Lesson - Google Slides and Distance Learning | HS-LS2-6<br>HS-LS2-7<br>HS-LS2-8<br>HS-LS4-5<br>HS-LS4-6 |
| 1                | Hands-on review activity                                                                                                                                                                                                                                                                              | Biodiversity and Invasive Species - 7 Engaging Lab Station Activities       |                                                          |
| 1                | Hands-on review activity                                                                                                                                                                                                                                                                              | Biodiversity – A Digital Scavenger Hunt Activity                            |                                                          |
| 1                | Review activity                                                                                                                                                                                                                                                                                       | Bill Nye The Science Guy - Biodiversity - Video Companion Worksheet         |                                                          |
| 1                | Review activity                                                                                                                                                                                                                                                                                       | Biodiversity and Invasive Species Digital Boom Cards                        |                                                          |
| 1                | <ul style="list-style-type: none"> <li>Invasive vs. Native Species</li> <li>The Effect of an Invasive Species on an Ecosystem</li> <li>The Small Asian Mongoose Case Study</li> <li>Controlling Invasive Species</li> </ul>                                                                           | Invasive Species Lesson - Google Slides and Distance Learning Ready         |                                                          |
| 1                | Hands-on review activity                                                                                                                                                                                                                                                                              | Invasive Species - Device-Based Scavenger Hunt Activity                     |                                                          |
| 1                | Review activity                                                                                                                                                                                                                                                                                       | Invasive Species - A Science Reading Comprehension                          |                                                          |
| Assessments      | There are multiple assessments included throughout this unit portion.                                                                                                                                                                                                                                 |                                                                             |                                                          |

# The Following Resources are Included

## **Ecosystems Resources**

- [Ecosystems - Lesson](#)
- [Ecosystems - Lab Station Activity](#)
- [Ecosystems - Science Reading Article](#)
- [Human Impact on Ecosystems Assignment](#)
- [Human Impact on Ecosystems Inquiry Lab Experiment: Ecobottles Lab](#)

## **Biomes Resources**

- [Biomes of the Earth - Lesson](#)
- [Biomes – Digital Scavenger Hunt Activity](#)
- [Biomes - Lab Station Activity](#)
- [Biomes Word Search and Scramble Activity](#)

## **Energy Flow in Ecosystems Resources**

- [Energy Flow in Ecosystems - Lesson](#)
- [Energy Flow In Ecosystems - Lab Station Activity](#)
- [Energy Flow in Ecosystems - Digital Scavenger Hunt Activity](#)
- [Ecosystems and Energy Flow Digital Boom Cards](#)
- [Bill Nye The Science Guy - Food Webs - Video Companion Worksheet](#)

## **Biodiversity and Invasive Species Resources**

- [The Importance of Biodiversity - Lesson](#)
- [Biodiversity and Invasive Species - Lab Station Activity](#)
- [Biodiversity – Digital Scavenger Hunt Activity](#)
- [Bill Nye The Science Guy - Biodiversity - Video Companion Worksheet](#)
- [Biodiversity and Invasive Species Digital Boom Cards](#)
- [Invasive Species - Lesson](#)
- [Invasive Species - Digital Scavenger Hunt Activity](#)
- [Invasive Species - A Science Reading Comprehension](#)

# Who's It For?

- **High School Biology Teachers**
- **Teachers using NGSS**
- **Teachers who want to increase their student's engagement and retention**
- **Teachers not looking to reinvent the wheel**



# Save yourself the **STRESS AND TIME**



**TWF**

# Spend your time WISELY



**TWF**