Biodiversity Exploration: Understanding Our Living World

Initial Exploration (15 minutes)

Let's begin by exploring what we already know about biodiversity!

1. Mind Mapping Exercise

In the space below, create a mind map using these central concepts:

- Species diversity
- Ecosystem relationships
- Environmental factors

Ecosystem Investigation (25 minutes)

Working in small groups, complete the following biodiversity survey:

2. Local Ecosystem Survey

Organism Type	Description	Location Found	Interactions Observed
Plants			
Insects			
Birds			

Food Web Construction (20 minutes)

Using your observations, create a detailed food web:

3. Building Food Relationships

Follow these steps to construct your food web:

1. List all producers (plants) at the bottom
2. Add primary consumers (herbivores)
3. Include secondary consumers (carnivores)
4. Draw arrows showing energy flow

Environmental Impact Analysis (30 minutes)

Investigate how human activities affect local biodiversity:

4. Human Impact Assessment

Human Activity	Positive Effects	Negative Effects	Suggested Solutions
Urban Development			
Agriculture			
Recreation			

Biodiversity Protection Project (45 minutes)

Design a conservation plan for your local area:

5. Conservation Action Plan

Step 1: Identify Key Species

List three important species in your area and explain why they're crucial:

1. Species 1: _____ Why? _____
2. Species 2: _____ Why? _____
3. Species 3: _____ Why? _____

Step 2: Habitat Protection Strategies

Design three specific actions to protect these habitats:

1. Action 1: _____
2. Action 2: _____
3. Action 3: _____

Step 3: Community Engagement Plan

How will you involve your community in biodiversity protection?

- Education: _____
- Activities: _____
- Monitoring: _____

Biodiversity Data Analysis (30 minutes)

Analyze and interpret biodiversity patterns:

6. Population Trends Analysis

Species Group	2020	2021	2022	Trend Analysis
Native Birds	___	___	___	_____
Pollinators	___	___	___	_____
Native Plants	___	___	___	_____

Habitat Restoration Planning (40 minutes)

Design a habitat restoration project:

7. Restoration Project Blueprint

Site Assessment:

- Location: _____
- Current Conditions: _____
- Target Species: _____

Resource Requirements:

Resource Type	Quantity Needed	Source
Native Plants	_____	_____
Tools	_____	_____
Materials	_____	_____

Ecosystem Services Investigation (35 minutes)

Explore and document ecosystem services in your area:

8. Ecosystem Services Assessment

Supporting Services:

List observed nutrient cycling and soil formation processes: 1. _____ 2. _____ 3. _____

Provisioning Services:

Document local food and material resources: 1. _____ 2. _____ 3. _____

Regulating Services:

Identify climate and water regulation features: 1. _____ 2. _____ 3. _____

Cultural Services:

Note recreational and cultural values: 1. _____ 2. _____ 3. _____

Biodiversity Monitoring Program (50 minutes)

Design and implement a long-term monitoring strategy:

9. Monitoring Protocol Development

Sampling Methods:

Species Group	Method	Frequency	Equipment Needed
Vegetation	_____	_____	_____
Invertebrates	_____	_____	_____
Vertebrates	_____	_____	_____

Data Recording Sheet:

Date: _____ Time: _____ Location: _____ Weather Conditions: _____ Observer(s): _____
Species Observations: 1. Species: _____ Count: ___ Behavior: _____ 2. Species: _____ Count: ___ Behavior: _____ 3. Species: _____ Count: ___ Behavior: _____ Habitat Conditions: • Vegetation Cover: _____ • Disturbance Signs: _____ • Other Notes: _____

Final Assessment and Reflection (45 minutes)

Evaluate learning and plan future actions:

10. Knowledge Assessment

Create a Comprehensive Concept Map:

Draw your concept map showing relationships between: • Biodiversity levels • Ecosystem functions • Human impacts • Conservation strategies

Personal Reflection:

1. What was the most surprising thing you learned about biodiversity?
2. How has your understanding of ecosystem conservation changed?
3. What actions will you take to protect biodiversity in your community?

Final Reflection and Assessment

Complete these final thoughts about biodiversity:

6. Learning Summary

Reflect on what you've learned about biodiversity:

Key Concepts I've Learned:

1. _____
2. _____
3. _____

How I Can Apply This Knowledge:

1. _____
2. _____
3. _____

Questions I Still Have:

1. _____
2. _____
3. _____

Student Name: _____

Date: _____

Teacher's Signature: _____