

# Ecosystem in a Bottle Worksheet

Student Name: \_\_\_\_\_ Date: \_\_\_\_\_

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## Project Overview

In this project, you will create a miniature ecosystem in a bottle. This ecosystem will help you observe and understand how different components interact and depend on each other. You will monitor your ecosystem over several weeks and record your observations.

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## Materials Needed

- Clear plastic bottle with cap (2-liter size works well)
  - Gravel or small rocks from the Santa Cruz River
  - Soil/Sand from the Santa Cruz River
  - Small plants (from the Santa Cruz River)
  - Water from the river
  - Small aquatic animals (optional, such as snails or small fish)
  - Decorative items (optional, such as small stones or figurines)
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## Steps to Create Your Ecosystem

1. **Prepare the Bottle:**
  - Rinse out the bottle and remove any labels.
  - Carefully cut the top off the bottle to create an opening large enough to work in. Keep the top to use as a lid.
2. **Layering:**
  - Add a 1-inch layer of gravel or small rocks to the bottom of the bottle for drainage.
  - Add a 2-3 inch layer of soil/sand on top of the gravel.
3. **Planting:**
  - Plant your small plants in the soil. Make sure they have enough space to grow.
  - If you are including aquatic animals, create a small pond area with water and plants that thrive in water.
4. **Watering:**
  - Lightly water the soil until it is moist but not soaked. If you have a pond, fill it with enough water for the aquatic plants and animals.
5. **Covering:**

- Place the top of the bottle back on to cover your ecosystem. This will help maintain humidity and create a stable environment.
- 6. Decorating (Optional):**
- Add small stones, figurines, or other decorative items to personalize your ecosystem.
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## Observations Log

### Week 1

Date	Observations	Changes Noted
Day 1		
Day 2		
Day 3		
Day 4		
Day 5		

### Week 2

Date	Observations	Changes Noted
Day 8		
Day 9		
Day 10		
Day 11		
Day 12		

### Week 3

Date	Observations	Changes Noted
Day 15		
Day 16		

Day 17		
Day 18		
Day 19		

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## Reflection Questions

1. **What changes did you observe in your ecosystem over time?**
    - \_\_\_\_\_
    - \_\_\_\_\_
  2. **Did any plants or animals struggle to survive? Why do you think this happened?**
    - \_\_\_\_\_
    - \_\_\_\_\_
  3. **How did the different components of your ecosystem interact with each other?**
    - \_\_\_\_\_
    - \_\_\_\_\_
  4. **What was the most surprising observation you made?**
    - \_\_\_\_\_
    - \_\_\_\_\_
  5. **How did the water cycle function within your bottle ecosystem?**
    - \_\_\_\_\_
    - \_\_\_\_\_
  6. **What would you do differently if you created another ecosystem in a bottle?**
    - \_\_\_\_\_
    - \_\_\_\_\_
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## Extension Activities

- **Research:** Look up additional plants or animals that could thrive in your ecosystem. Explain why they would be good additions.
- **Presentation:** Create a presentation or poster showing the steps of your project, your observations, and what you learned.
- **Comparison:** Compare your bottle ecosystem with a natural ecosystem. What are the similarities and differences?

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## Tips for Success

- **Monitor Regularly:** Check your ecosystem daily to make sure it has enough water and the plants are healthy.
- **Keep Records:** Write down your observations immediately to ensure accuracy.
- **Be Patient:** Some changes may take time to become noticeable.